



FINAL



**ENVIRONMENTAL ASSESSMENT FOR THE CONSTRUCTION OF A
NEW FIRE STATION, EDWARDS AIR FORCE BASE, CALIFORNIA**

October 2006

**95th AIR BASE WING
CIVIL ENGINEER AND TRANSPORTATION DIRECTORATE
ENVIRONMENTAL MANAGEMENT DIVISION
EDWARDS AFB, CALIFORNIA**

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The views, opinions, and findings contained in this report are those of the author(s) and should not be construed as an official Department of the Air Force, Air Force Materiel Command (AFMC), position, policy or decision, unless so designated by other documentation.

For:
95th Air Base Wing
Civil Engineer and Transportation Directorate
Environmental Management Division
Edwards AFB, California

FINDING OF NO SIGNIFICANT IMPACT FOR THE CONSTRUCTION OF A NEW FIRE STATION, EDWARDS AIR FORCE BASE, CALIFORNIA

1.0 INTRODUCTION

The 95th Air Base Wing, Civil Engineer and Transportation Directorate, Fire Protection Division (95 ABW/CEF) proposes to construct a new fire station on Main Base at Edwards AFB. The new fire station is in response to inadequacies in the current Fire Station 1, including space for personnel and modern firefighting equipment and vehicles.

The new 31,000-square foot building would include adequate rooms for the number of firefighting personnel; appropriate number of showers to accommodate personnel; a training room; appropriate heating, ventilation, and air conditioning (HVAC); and a fire suppression system. The facility would have four fire hydrants equipped with adequate pressure for rapid resupply of firefighting vehicles; drive-through vehicle bays sized to accommodate new, larger firefighting vehicles; and a separate 2,500-square foot storage facility. The cost of the construction project is estimated at \$8.4 million.

Under Alternative B, the No Action Alternative, 95 ABW/CEF would continue to utilize Fire Station 1, Building 1617. The facility would continue to fail to meet the growing needs of this organization with inadequate rooms for personnel, showering facilities, vehicle bays, and HVAC system. Equipment would continue to be stored outside, causing weather deterioration. In the current condition, this facility is not in compliance with National Fire Protection Association (NFPA) 1500, *Standard on Fire Department Occupational Safety and Health Program*. There would be no new site preparation or building construction-related activities. Building 1617 facilities would not be expanded to meet growing mission requirements for Fire Protection personnel and modern firefighting equipment. Existing difficulties in retaining and recruiting personnel would persist due to the overcrowded work environment. Deterioration of equipment due to weather would continue and upgrade of firefighting vehicles would be limited due to inadequate bays.

The Environmental Assessment (EA) documents the analysis of the activities required to construct a modern fire station and supports this finding.

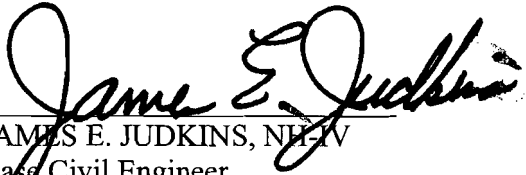
2.0 ENVIRONMENTAL EFFECTS

The proposed construction of the fire station is not expected to significantly alter the productivity of the environment. This EA has analyzed several components of the natural and manmade environment for potential impacts as a result of the proposed action. The potential impacts evaluated included: Land Use, Air Quality, Water Resources, Safety and Occupational Health, Hazardous Materials and Waste, Biological Resources, Geology and Soils, Socioeconomics, Infrastructure, Energy Resources, and Public/Emergency Resources. No potentially significant impacts were identified in any of these areas.

3.0 FINDINGS

A Finding of No Significant Impact (FONSI) for the Proposed Action has been determined based on the absence of significant adverse impacts to the environment. Background information that supports the research and development of this FONSI and the EA is on file at Edwards AFB and can be obtained by contacting the following:

95 ABW/CEV
Environmental Management
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Date

COVER SHEET

**ENVIRONMENTAL ASSESSMENT
FOR THE CONSTRUCTION OF A NEW FIRE STATION,
EDWARDS AFB, CALIFORNIA**

1. Lead Agency: United States Air Force
2. Cooperating Agency: None
3. Proposed Action: Environmental Assessment for the Construction of a New Fire Station, Edwards Air Force Base, California
4. Inquiries on this document should be directed to the 95th Air Base Wing, Civil Engineer and Transportation Directorate, Environmental Management Division, Attn: Gary Hatch, 5 East Popson Avenue, Building 2650A, Edwards Air Force Base, California 93524-8060, (661) 277-1454 or e-mail gary.hatch@edwards.af.mil.
5. Designation: Final Environmental Assessment (EA)
6. Abstract: Pursuant to the *National Environmental Policy Act (NEPA) of 1969*, Title 42 United States Code 4321, this EA has been prepared to analyze the potential environmental consequences of the proposed action. The proposed project would involve the construction of a new fire station. The analysis in this EA illustrates that none of the environmental impacts from the proposed action would be significant if the required/recommended minimization measures are followed.

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LIST OF ABBREVIATIONS AND ACRONYMS

AB	Assembly Bill
ACCS	accumulation site
ACM	asbestos-containing material
ADCA	Animal Damage Control Act
AF	Air Force
AFB	Air Force Base
AFFTC	Air Force Flight Test Center
AFFTCI	Air Force Flight Test Center Instruction
AFI	Air Force Instruction
AFJMAN	Air Force Joint Manual
AFOSH	Air Force Occupational Safety and Health
AFPD	Air Force Policy Directive
AFRL	Air Force Research Laboratory
AICUZ	Air Installation Compatible Use Zone
AOC	area of concern
AP	accumulation point
APCDs	Air Pollution Control Districts
AQMP	Air Quality Management Districts
ARB	Air Resources Board
ARAR	Applicable or Relevant and Appropriate Requirement
ATC	authority to construct
AVAQMD	Antelope Valley Air Quality Management District
AVEK	Antelope Valley East Kern
AQMD	Air Quality Management Districts
BACT	Best Available Control Technology
BMP	best management practice
bhp	brake horsepower
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CAAQS	California Ambient Air Quality Standards
Cal –EPA	California Environmental Protection Agency
CARB	California Air Resources Board
CATEX	Categorical Exclusion
CCAA	California Clean Air Act
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CDW	construction and demolition waste
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CH&SC	California Health and Safety Code
CO	carbon monoxide
CUPA	Certified Unified Program Agency

LIST OF ABBREVIATIONS AND ACRONYMS (Continued)

CWA	Clean Water Act
CWRCB	California Water Resources Control Board
dB	decibel
DFIRS	Department of Defense Fire Incident Reporting System
DNL	day-night average sound level
DOD	Department of Defense
DODD	Department of Defense Directive
DODI	Department of Defense Instruction
DOE	Department of Energy
DOT	Department of Transportation
DTSC	Department of Toxic Substances Control
DT&E	developmental test and evaluation
EA	Environmental Assessment
EIAP	Environmental Impact Analysis Process
EIR	Economic Impact Region
EMCS	energy management control systems
EO	Executive Order
EPCRA	Emergency Planning and Community Right-to-Know Act
ERP	Environmental Restoration Program
ESA	Endangered Species Act of 1973
FAA	Federal Aviation Administration
FFA	Federal Facility Agreement
FOD	foreign object damage
FONSI	Finding of No Significant Impact
FY	fiscal year
HAP	hazardous air pollutants
HDDT	heavy duty diesel truck
HDGT	heavy duty gasoline truck
HVAC	heating, ventilation, and air conditioning
HWMP	Hazardous Waste Management Plan
HWSF	Hazardous Waste Storage Facility
IAP	initial accumulation point
ICE	internal combustion engine
IMT	information management tool
INRMP	Integrated Natural Resources Management Plan
JPL	Jet Propulsion Laboratory
KCAPCD	Kern County Air Pollution Control District
LBP	lead based paint
LDDE	light duty diesel engine
LDDT	light duty diesel truck
LDGE	light duty gas engine
LDGT	light duty gas truck
LDGV	light duty gas vehicle
L _{dn}	day/night equivalent noise level
MBTA	Migratory Bird Treaty Act of 1918

LIST OF ABBREVIATIONS AND ACRONYMS (Continued)

MDAB	Mojave Desert Air Basin
MDAQMD	Mojave Desert Air Quality Management District
MSDS	Material Safety Data Sheet
mg/m ³	milligrams per cubic meter
mph	miles per hour
N/A	not applicable
NAAQS	National Ambient Air Quality Standards
NASA	National Aeronautics and Space Administration
NEC	National Electrical Code
NEPA	National Environmental Policy Act of 1969
NESHAP	National Emission Standards for Hazardous Air Pollutants
NFPA	National Fire Protection Association
NO ₂	nitrogen dioxide
NO _x	nitrogen oxides
NRCS	Natural Resource Conservation Service
NSR	new source review
O ₃	ozone
OSHA	Occupational Safety and Health Administration
ORVA	off-road vehicle area
OWS	oil/water separator
Pb	lead
PCB	polychlorinated biphenyls
PIRA	Precision Impact Range Area
PL	Public Law
PM _{2.5}	particulate matter less than or equal to 2.5 microns/respirable particulate matter
PM ₁₀	particulate matter less than or equal to 10 microns/fine particulate matter
POV	personally-owned vehicle
PPA	Pollution Prevention Act
PPOA	Pollution Prevention Opportunity Assessment
PTE	potential to emit
PTO	permit to operate
ppb	parts per billion
ppm	parts per million
RCRA	Resource Conservation and Recovery Act
ROD	record of decision
RWQCB	Regional Water Quality Control Board
SCS	Soil Conservation Service
SEPRC	State Emergency Planning and Response Commission
SIP	State Implementation Plan
SMU	Stormwater Management Unit
SO ₂	sulfur dioxide
SO _x	sulfur oxides
SWDA	Stormwater Drainage Area
SWPPP	Stormwater Pollution Prevention Plan
TAC	toxic air contaminant

LIST OF ABBREVIATIONS AND ACRONYMS (Concluded)

TRI	toxic release inventory
TSE	Tactical Support Equipment
UBC	Uniform Building Code
UPC	Uniform Plumbing Code
USACE	United States Army Corps of Engineers
USAF	United States Air Force
USDA	United States Department of Agriculture
U.S. EPA	United States Environmental Protection Agency
U.S.C.	United States Code
USFWS	United States Fish and Wildlife Service
VOC	volatile organic compound
WWTP	wastewater treatment plant
$\mu\text{g}/\text{m}^3$	1×10^{-6} grams per cubic meter

1.0 INTRODUCTION

1.1 Proposed Action

The 95th Air Base Wing, Civil Engineer and Transportation Directorate, Fire Protection Division proposes to construct a new fire station totaling approximately 31,000-square feet. This facility would also require a separate storage facility of approximately 2,500 square feet. The new fire station would replace the current Fire Station 1, Building 1617. The new facility would be located on South Flightline Road on Main Base at Edwards Air Force Base (AFB), California. This project is anticipated to begin during fiscal year (FY) 2008.

1.2 Purpose and Need

The purpose of this Environmental Assessment (EA) is to assess possible environmental impacts resulting from construction of the new fire station. Construction of this facility is necessary to properly house personnel and equipment. The current facility, Building 1617, cannot accommodate the current number of personnel, house modern equipment, or meet safety requirements.

Construction of the new fire station would achieve the following goals:

- a. Allow for adequate housing of required personnel;
- b. Provide sufficient space to safely accommodate large, modern, firefighting vehicles;
- c. Ensure the newly constructed buildings are in conformity with current seismic building codes;
- d. Reduce weather damage to firefighting equipment by being housed in a storage facility;
- e. Provide more effective mission support by allowing for rapid resupply of firefighting vehicles;
- f. Improve morale with a better work environment; and
- g. Achieve cost savings from a more energy efficient facility.

1.3 Location and Scope of the Proposed Action

Edwards AFB is located in the Antelope Valley region of the western Mojave Desert in Southern California. It is about 60 miles northeast of Los Angeles, California. The base occupies an area of approximately 301,000 acres or 470 square miles. Portions of the base lie within Kern, Los Angeles, and San Bernardino counties (Figure 1).

Proposed project activities would be located in the Main Base portion of Edwards AFB. Specifically, they would take place on South Flightline Road (Figure 2).

1.4 Issues and Concerns

The following sections discuss environmental factors that may be affected and may be of concern due to the proposed action. The factors that are not affected as a result of the proposed action are also presented.

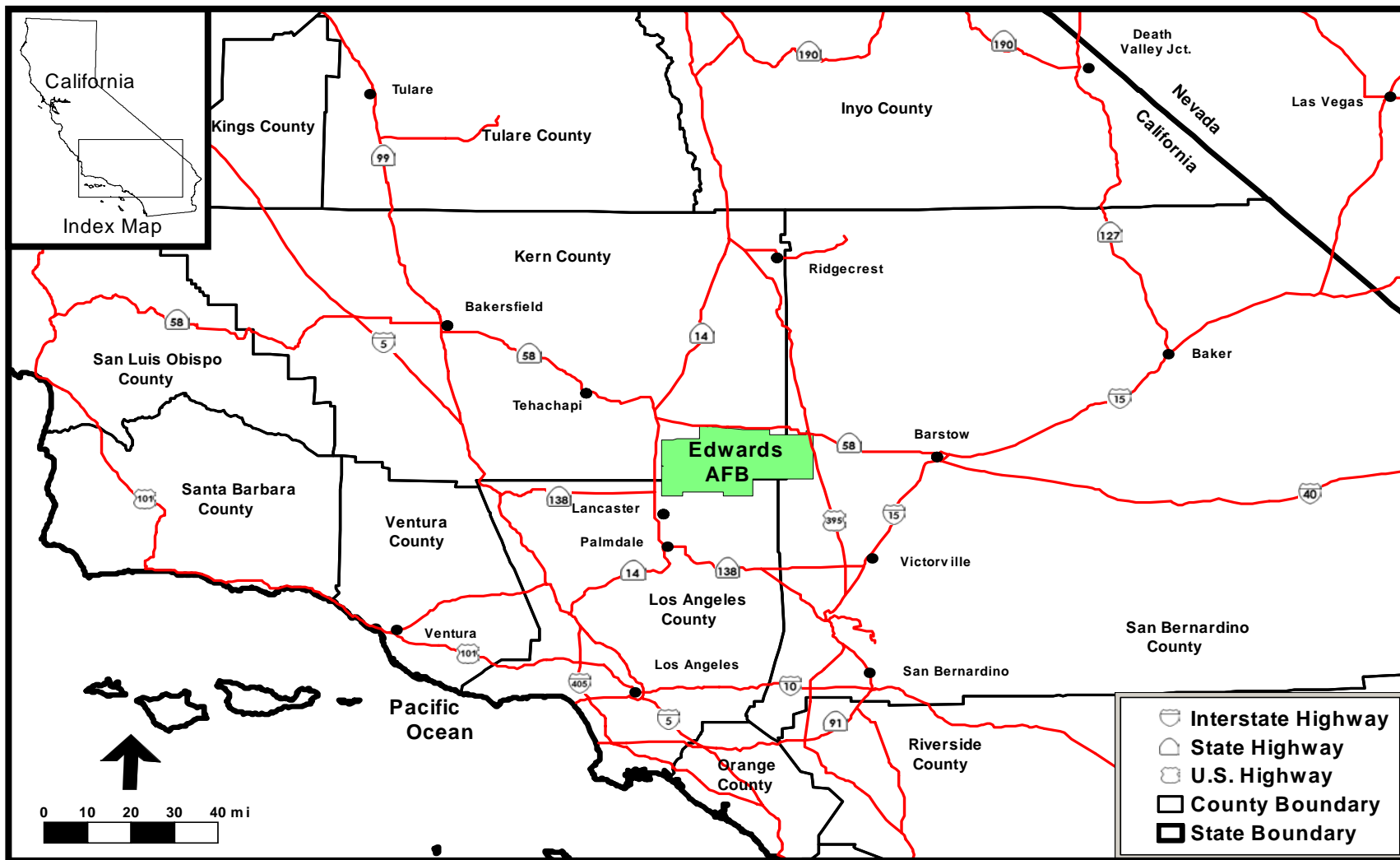


Figure 1. General Vicinity Map

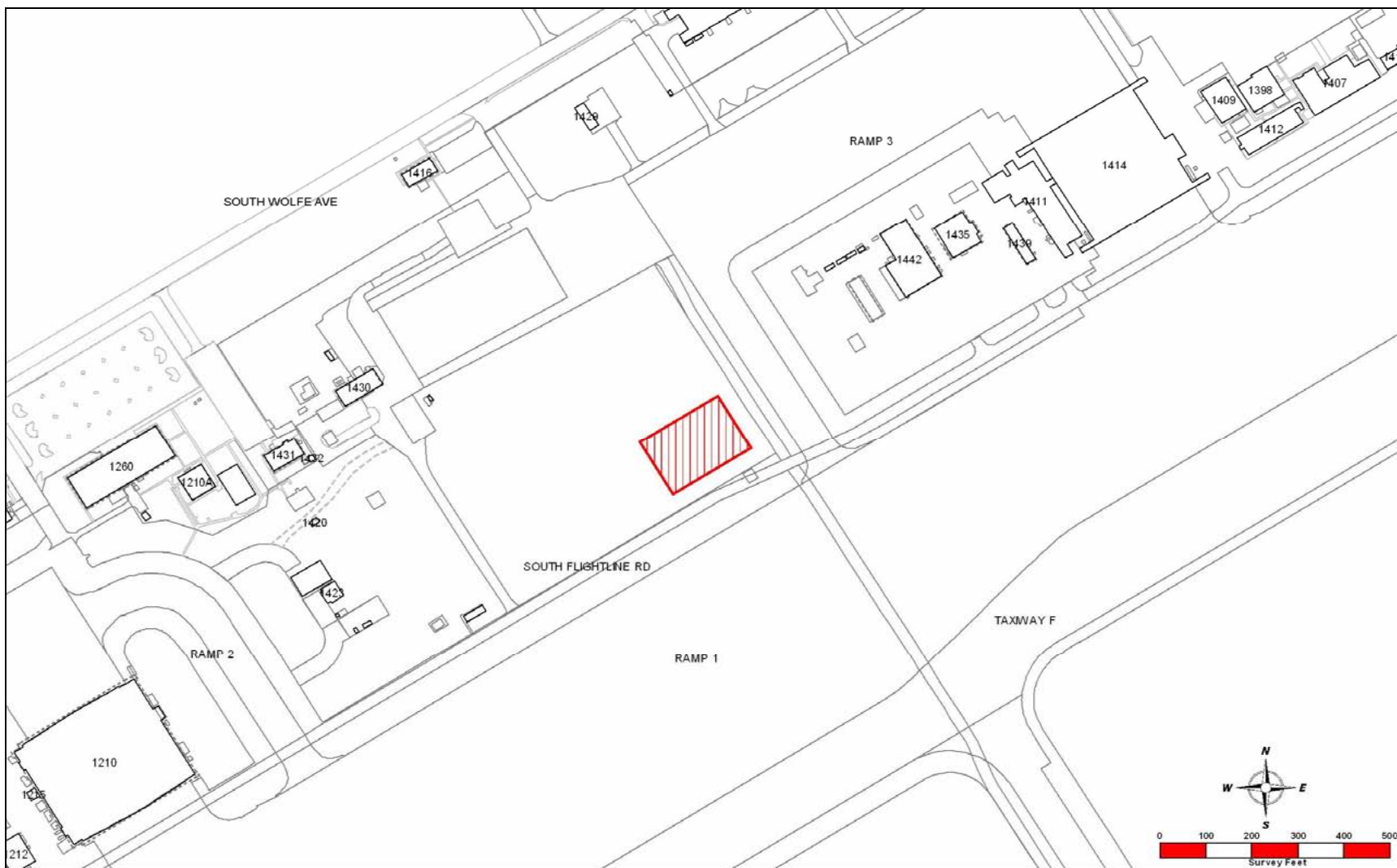


Figure 2. Project Location Map

1.4.1 Issues and Concerns Studied in Detail

During the scoping process, the following issues and concerns were identified as requiring assessment when considering the potential environmental impacts of the alternatives.

a. Land Use–Proposed project activities would be located in the Main Base flightline area. Construction of this facility may create foreign object damage (FOD) material, which would be of concern to aircraft operations in the vicinity of the runway.

b. Air Quality–The proposed project would generate ozone (O₃) precursor compounds (e.g., volatile organic compounds [VOCs] and oxides of nitrogen [NO_x]), primarily from the combustion of fuel in construction equipment and vehicles. In addition, particulate matter less than or equal to 10 microns (PM₁₀) would be generated from earthwork activities, construction activities, equipment use, and vehicle use.

c. Water Resources–Construction activities have the potential to affect stormwater drainage patterns. Proposed project activities are not anticipated to affect groundwater quantity or quality.

d. Safety and Occupational Health–Due to the close proximity of this project to the flightline, noise levels generated by aircraft and helicopter operations may exceed the 65-decibel level. This may pose a risk to personnel working on this project. Although there are some Environmental Restoration Program (ERP) sites in surrounding areas, there are no known ERP sites associated with the proposed project location (Bare 2005).

e. Hazardous Materials and Waste–Construction activities would use hazardous materials and create hazardous waste. The proper use, handling, transportation, and storage of hazardous materials and hazardous waste to prevent human exposure and environmental contamination are required. These activities would generate solid wastes (including recyclable waste) that require disposal or recycling.

f. Biological Resources–Desert tortoise (*Gopherus agassizii*), listed as threatened under the federal *Endangered Species Act of 1973* (ESA), Title 16 United States Code (U.S.C) 1531–1544, may wander into the area from adjacent habitat during project activities.

g. Geology and Soils–Construction activities have the potential to create soil erosion during vegetation removal. The use of fill material may be required. Project activities have the potential to damage ERP monitoring wells and underground lines that are associated with nearby ERP sites. Digging in the project area may disturb ongoing or future remediation activities.

h. Socioeconomic–The proposed construction of the new fire station would generate revenue into the local economy, resulting in a positive impact.

i. Infrastructure–During construction activities, the potential exists for traffic problems associated with the transportation of material and equipment. Utility lines could be accidentally severed and service interrupted during construction activities.

j. Energy Resources–The new facility would be more energy efficient, resulting in reduced use and increased dollar savings to the Air Force.

k. Public/Emergency Resources–The new facility would allow for larger, modern firefighting vehicles and prolong the life of firefighting equipment. Ultimately, this will aid in reducing loss from fire/hazardous material incidents.

1.4.2 Issues and Concerns Eliminated from Detailed Study

The following issues and concerns were initially considered, but subsequently eliminated from further consideration in the EA.

a. Cultural Resources—Proposed project activities are not located in or adjacent to any property of historic, archeological or architectural significance, or American Indian sites (McGetrick 2005).

b. Environmental Justice—The Executive Orders (EOs) on Environmental Justice and the protection of children require federal agencies to identify and address disproportionately high adverse effects of its activities on minority, low-income populations, and/or children. This action has been reviewed in accordance with EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, and EO 13045, *Protection of Children from Environmental Health and Safety Risks*. Given that the construction activities would occur entirely on base, the United States Air Force (USAF) has determined that this action has no substantial, disproportionate impact to minority, low-income populations, and/or children.

1.5 Regulatory Requirements, Permits, and Approvals

1.5.1 Regulatory Requirements

This EA has been prepared in order to comply with *National Environmental Policy Act of 1969* (NEPA) and Council on Environmental Quality (CEQ) regulations implementing NEPA. This document is intended to fulfill the requirements for compliance with Title 40 Code of Federal Regulations (CFR) Parts 1500–1508 and Air Force Instruction (AFI) 32-7061, *The Environmental Impact Analysis Process*, the applicable AFI for implementing NEPA. Air Force Instruction 32-7061 completely adopts 32 CFR 989, *Environmental Impact Analysis Process (EIAP)*.

1.5.2 Permits and Approvals

The contractor/proponent performing the work is responsible for obtaining the relevant permits and accomplishing any required notification. Environmental permitting requirements for all work on base are coordinated through Environmental Management Division. The following permits have been identified as a requirement for this project. Other permits, not identified in this document, may be required dependent upon future regulatory changes.

a. Air quality operational permits from the Kern County Air Pollution Control District (KCAPCD) may be required for stationary equipment (e.g., generators, air compressors, or welders) exceeding 50 brake horsepower (bhp) that remain on base for more than 45 days. Operational air permits are to be obtained prior to bringing equipment on base.

b. If unpermitted stationary equipment exceeding 50 bhp remain on base less than 45 days and emit less than 2 tons per year of any air contaminant, the equipment must have a written exemption from the Kern County Air Pollution Control Officer.

c. An Air Force Flight Test Center (AFFTC) Information Management Tool (IMT) 5926, *Edwards AFB Civil Engineering Work Clearance Request* (Digging Permit), is required for any trenching or digging operations that extend 12 or more inches below the ground surface.

d. An Air Force (AF) Form 592, *Welding, Cutting and Brazing Permit* (Hot Work Permit), is required for any project activities involving welding, torching, cutting, and brazing.

e. Project will require an AFFTC Form 5852, *Permit for Industrial Wastewater Discharge, Edwards AFB, California*, to discharge nonhazardous wastewater to the Main Base Wastewater Treatment Plant (WWTP).

1.6 Related Environmental Documents

A number of environmental documents have been prepared and approved that address activities related to project activities as discussed in this EA. These documents contain information used in the preparation of this EA. A listing of these documents is as follows:

- a. *Edwards Air Force Base General Plan* (AFFTC 2001a).
- b. *Programmatic Environmental Assessment for Small Building Construction, Relocation, and Modification at Edwards Air Force Base, California* (AFFTC 1998a).
- c. *Environmental Assessment for the Replacement of Base Operations, Edwards Air Force Base, California* (AFFTC 2001b).
- d. *Programmatic Environmental Assessment for Routine Flightline Activities, Edwards Air Force Base, California* (AFFTC 1997).
- e. *Environmental Assessment for the Construction of a Propulsion Energetics Laboratory, Air Force Research Laboratory, Edwards Air Force Base, California* (AFFTC 2004a).
- f. *Environmental Assessment for the Repair, Reconstruction, and/or Replacement of the Main Base Runway, Edwards Air Force Base, California* (AFFTC 2004b).

1.7 Future Use of this Document

Future proposed actions documented on an AF Form 813, *Request for Environmental Impact Analysis*, would be reviewed and evaluated to determine if the future action falls within the scope of this EA. In the event that a future action is determined to fall within the scope of this EA, and no new environmental impacts would occur as a result of the future action, a categorical exclusion (CATEX) could be prepared upon submittal of the AF Form 813. A CATEX could also be prepared for future actions that would result in additional minor impacts not discussed in this EA, if impacts can be reduced to insignificant levels through minimization measures. In some cases, a supplement to this EA might be required. In that case, a new Finding of No Significant Impact (FONSI) would be required. Future actions that are found to result in significant impacts to the environment that cannot be minimized to a level of insignificance would need to be addressed in an Environmental Impact Statement and a Record of Decision (ROD).

1.8 Organization of This Environmental Assessment

This EA consists of seven sections and one appendix, which are summarized accordingly.

- a. Section 1.0, Introduction–Describes the purpose and need for the proposed action, location and scope of work, issues and concerns, regulatory requirements, and future use of this document.
- b. Section 2.0, Description of the Proposed Action and Alternatives–Describes and compares the alternatives and environmental consequences.
- c. Section 3.0, Affected Environment–Describes the existing environment at Edwards AFB and the surrounding area that may be affected.
- d. Section 4.0, Environmental Consequences–Discusses the environmental impact of the proposed action, including any adverse environmental effects that cannot be avoided; the relationship between short-term uses of the human environment and the maintenance and enhancement of long-term productivity, including cumulative effects resulting from actions taken; and any irreversible or irretrievable commitment of resources that would be involved in the proposed action.
- e. Section 5.0, References–Provides the references cited throughout the document.
- f. Section 6.0, List of Preparers and Reviewers–Lists the persons who were primarily responsible for preparing and reviewing this EA.
- g. Section 7.0, List of Agencies and Organizations to Whom Copies of the Environmental Assessment Are Sent–Lists the various agencies and organizations to whom copies of the EA are sent.
- h. Appendix A, Air Calculations and Conformity Letter–Provides air emission calculations and the air conformity letter.

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2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

This section describes the Proposed Action, Alternative A–Construction of a New Fire Station; and Alternative B–No Action Alternative. In addition, there is a brief description of other alternatives that were considered, but eliminated from further study, as well as a comparative analysis of the impacts of the alternatives.

2.1 Alternative A–Construction of a New Fire Station (Proposed Action)

The 95th Air Base Wing, Civil Engineer and Transportation Directorate, Fire Protection Division (95 ABW/CEF) proposes to construct a new fire station on Main Base, Edwards AFB, which would replace Fire Station 1, Building 1617. The new facility would be an approximately 31,000-square foot, one-story building with all the amenities of a freestanding unit. The new facility would be supplied with modern heating and cooling, plumbing, fire sprinkler system, an uninterrupted power supply, landscaping, and an adjacent parking lot. The new facility would be located on South Flightline Road (see Figure 2). The estimated cost for this alternative is \$8.4 million. It would include the following:

- a. Adequate number of rooms for the number of firefighting personnel;
- b. Appropriate number of showers to accommodate personnel;
- c. Training room;
- d. Separate 2,500-square foot storage facility equipped with heating and cooling for backup firefighting agents;
- e. Four fire hydrants equipped with adequate pressure for rapid resupply of firefighting vehicles; and
- f. Drive-through vehicle bays sized to accommodate new, larger firefighting vehicles.

2.1.1 Site Preparation Activities

Site preparation activities would include:

- a. Constructing staging areas, access routes, and/or temporary construction field offices;
- b. Excavating and site preparation for building pads; and
- c. Trenching for required underground utility systems (e.g., communications links, water systems, storm and sanitary sewer lines, and natural gas lines).

2.1.2 Construction Activities

Construction activities would include:

- a. Pouring concrete for foundations, pads, and walkways, and asphalt for vehicle parking areas and roads;
- b. Installing insulation and completing needed interior work;
- c. Installing plumbing; fire sprinklers; electrical systems; and heating, ventilation, and air conditioning (HVAC) system;

- d. Installing project-specific equipment and facilities;
- e. Painting striping on roadways, parking areas, and walkways; and
- f. Installing any required landscaping.

2.2 Alternative B–No Action Alternative

Under the no action alternative, a new fire station would not be constructed and Building 1617 would continue to be used to house Fire Protection personnel. The facility would continue to fail to meet the growing need of this organization with an inadequate HVAC system, showering facilities, and vehicle bays. Equipment would continue to be stored outside, causing weather deterioration. Installation of a fire alarm or suppression system would be required in order to be in compliance with National Fire Protection Association (NFPA) 1500, *Standard on Fire Department Occupational Safety and Health Program*. In the current condition, this facility is not in compliance with this regulation.

2.3 Criteria for Selection of a Reasonable Range of Alternatives

The criteria identified in this section establish a minimum set of requirements that must be met in order for an alternative to be considered viable. Those not meeting these minimum requirements have been eliminated from further discussion. The reasons for elimination are documented in Section 2.4. Alternatives meeting all selection criteria are retained and fully analyzed in Section 4.0, Environmental Consequences, of this EA. The criteria used to select the alternatives discussed in this document are:

a. Technical

(1) Provide an upgraded facility that conforms with current safety requirements of NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*;

(2) Comply with Military Handbook 1190, Part II, *Facility Planning and Design Guide*;

(3) Comply with *Design Standards for Edwards Air Force Base Comprehensive Plan* (AFFTC 1997);

(4) Comply with the *Edwards Air Force Base Energy Plan* (AFFTC 1995b);

(5) Comply with Occupational Safety and Health Administration (OSHA) Standards (29 CFR 1910); and

(6) Comply with national energy goals established by Public Law (PL) 102-486, *Energy Policy Act of 1992*.

b. Operational

(1) Facility needs to be centrally located in the flightline area. This would allow the Fire Protection Division to have satisfactory response time to all areas of the flightline; and

(2) Facility needs to be located in such a way that the vehicles would not have to cross the taxiway when exiting the fire station.

- c. Environmental
 - (1) Minimize habitat disturbance; and
 - (2) Retain maximum amount of undisturbed area.
- d. Economic
 - (1) Reduce repair and maintenance costs; and
 - (2) Achieve a 10-year or less payback for energy conservation measures.

2.4 Alternatives Considered but Dismissed from Further Consideration

Alternatives to the no action alternative were considered, but were subsequently dismissed since they did not meet the technical, environmental, and economic criteria. The alternatives were: revitalization of facilities as needed and construction of the new fire station at alternate locations. A discussion of these alternatives is presented as follows.

Revitalization of the current Fire Station 1, Building 1617, on an as-needed basis was subjected to an economic analysis. In terms of cost/benefit ratio results, Alternative A, for replacing the fire station, is more cost effective at \$0.26 million per increment of benefit compared to renovating the existing facility at \$0.93 million per increment of benefit (AFFTC 2005). Workarounds would be affected during numerous periodic construction phases causing response time delays and wasted man hours. The cost of renovating the facility would be unacceptable.

Construction of the fire station east of Building 1617 (location 1) or northeast of Building 1624 (location 2) were alternative locations that were considered (Figure 3). Location 1 would position the fire station next to Taxiway C and location 2 would position it next to Taxiway E. Both locations were dismissed because firefighting vehicles would have to cross an active taxiway in order to exit the facility.

2.5 Comparison Summary of Alternatives

Table 1 presents a comparison summary of the project description and location for Alternative A, Construction of a New Fire Station, and Alternative B, No Action Alternative. Table 2 presents a comparison of the environmental impacts anticipated because of implementing these two alternatives.

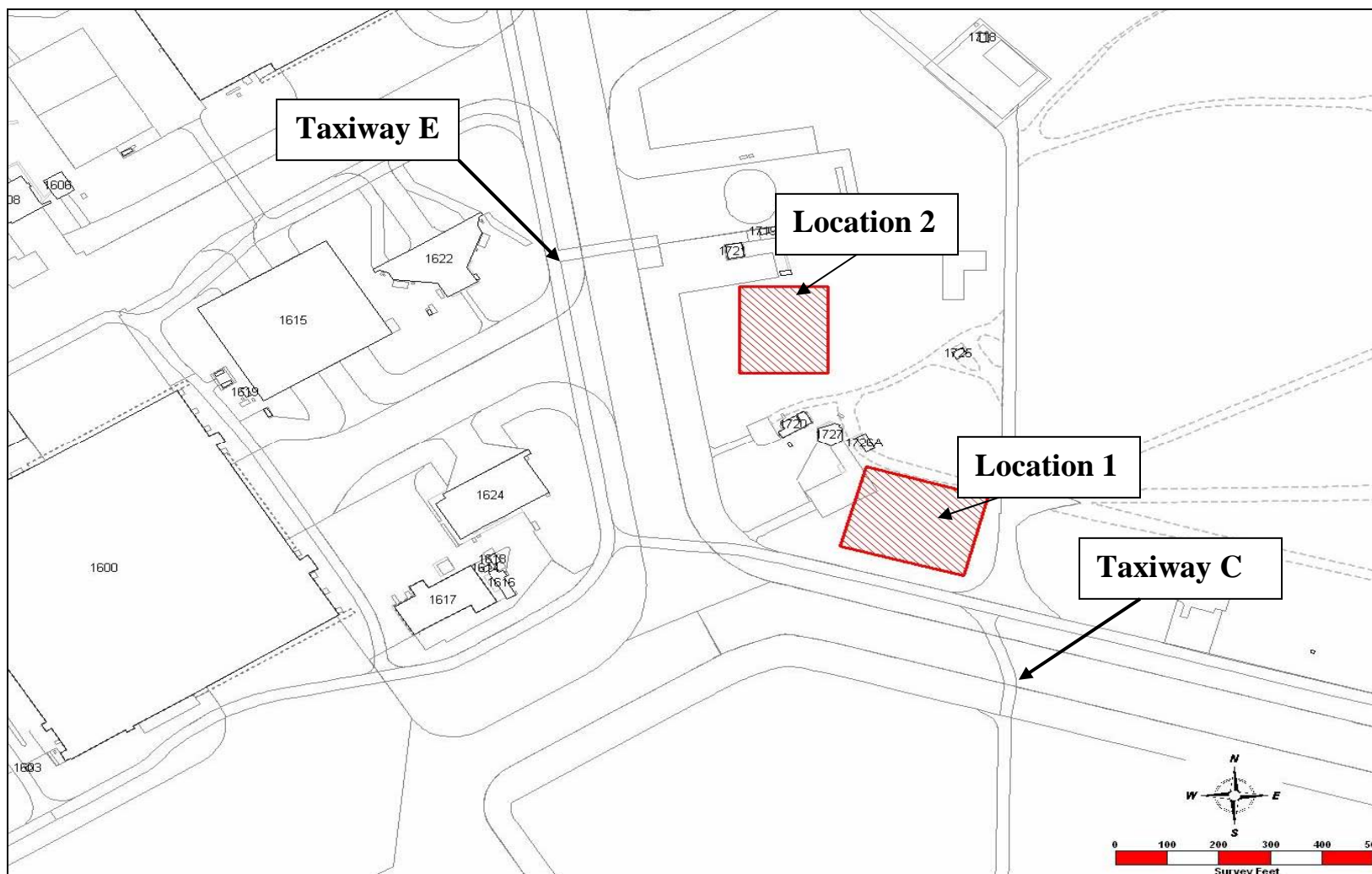


Figure 3. Dismissed Alternative Locations

**TABLE 1.
COMPARISON OF ALTERNATIVES**

	Alternative A (Proposed Action)	Alternative B (No Action Alternative)
Project Description	Construct new fire station	Retain existing facilities in current condition with minimal repairs and updates
Location	Main Base, South Flightline Road	Building 1617
Description of Actions	The new fire station would be an approximate 31,000-square foot building and would include: larger rooms; adequate showering facilities; a training room; drive-through vehicle bays sized to accommodate new, larger firefighting vehicles; four fire hydrants; and a 2,500-square foot storage facility.	Building 1617 would continue to house firefighting personnel. There would continue to be inadequate showering facilities; vehicle bays; and heating, ventilation, and air conditioning system. Equipment would continue to be stored outside, causing weather deterioration. Installation of a fire alarm or suppression system would be required in order to be in compliance with the National Fire Protection Agency (NFPA) 1500, <i>Standard on Fire Department Occupational Safety and Health Program</i> .

TABLE 2.
SUMMARY OF THE POTENTIAL ENVIRONMENTAL IMPACTS

Environmental Issue	Alternative A Construction of a New Fire Station (Proposed Action Alternative)	Alternative B No Action Alternative
Land Use		
<ul style="list-style-type: none"> Compatibility with the <i>Edwards Air Force Base General Plan</i> (AFFTC 2001a) and the Edwards AFB Design Standards Foreign Object Damage (FOD) generation 	<p>The new facility would be compatible with the <i>Edwards Air Force Base General Plan</i> (AFFTC 2001a), the Edwards AFB Design Standards, and all Air Force instructions and regulations. No adverse impacts are anticipated.</p> <p><u>Minimizations:</u> Compliance with the <i>Edwards Air Force Base General Plan</i> (AFFTC 2001a), Edwards AFB Design Standards, and all Air Force instructions. Should changes occur to the approved siting of this project, final approval from the Base Planning and Zoning Committee must be obtained.</p> <p>The potential for FOD generation exists during construction activities. No adverse impacts are anticipated.</p> <p><u>Minimizations:</u> Project personnel shall use standard operating procedures for the prevention of FOD. Contact Airfield Management for FOD reduction guidelines.</p>	<p>Construction activities would not occur under this alternative. The facility would continue to not be in compliance with the National Fire Protection Agency (NFPA) 1500, <i>Standard on Fire Department Occupational Safety and Health Program</i></p> <p><u>Minimizations:</u> None required.</p> <p>Potential for FOD would be minimized due to no major construction occurring in the area.</p> <p><u>Minimizations:</u> During any repairs to the current facility, standard operating procedures would continue to be followed to control the potential for FOD.</p>
Air Quality		
<ul style="list-style-type: none"> Tons and types of pollutants generated Regionally significant Permits Required 	<p>Increased air emissions would occur during construction. Total emissions during project activities of approximately 5.3 tons per year volatile organic compounds and 7.8 tons per year oxides of nitrogen would be generated. Hazardous air pollutants would also be generated during construction activities. No long-term adverse impacts are anticipated.</p> <p><u>Minimizations:</u> Suspend grading, diskings, and other earthwork projects at wind speeds exceeding 25 mph. The exposed surfaces shall be sprayed with water to reduce dust.</p> <p>Not regionally significant.</p> <p>Use of construction-related equipment with internal combustion engines over 50 brake horsepower rating (e.g., welders, generators, and compressors.) shall require a permit from the local air agency. If such equipment is to remain on base less than 45 calendar days, then a written exemption must be obtained from the local air agency.</p>	<p>Since construction of the new fire station would not occur, there would be no change in current air quality emissions.</p> <p><u>Minimizations:</u> No new measures are required.</p> <p>Not regionally significant.</p> <p>No permits required for this alternative.</p>
	<p><u>Minimizations:</u> Compliance with local air permit regulations required prior to the start of the project.</p>	<p><u>Minimizations:</u> None required.</p>

TABLE 2. (Continued)
SUMMARY OF THE POTENTIAL ENVIRONMENTAL IMPACTS

Environmental Issue	Alternative A Construction of a New Fire Station (Proposed Action Alternative)	Alternative B No Action Alternative
Water Resources		
<ul style="list-style-type: none"> Quality of stormwater runoff 	<p>Construction debris or hazardous materials have the potential to be introduced into the stormwater drainage system. No adverse impacts are anticipated.</p> <p><u>Minimizations:</u> Project activities should follow the procedures and controls outlined in the <i>Stormwater Pollution Prevention Plan (SWPPP) Edwards Air Force Base, California</i> (Air Force Flight Test Center [AFFTC] 1998b).</p> <p>The proposed project shall comply with AFFTC Instruction 32-6, <i>Edwards AFB Wastewater Instruction</i>.</p>	<p>No change from existing conditions.</p> <p><u>Minimizations:</u> Any project activities should continue to follow the procedures and controls outlined in the <i>Stormwater Pollution Prevention Plan (SWPPP), Edwards Air Force Base, California</i> (Air Force Flight Test Center [AFFTC] 1998b).</p>
Safety And Occupational Health		
<ul style="list-style-type: none"> Potential for exposure to asbestos-containing material (ACM) and lead-based paint (LBP) 	<p>During new construction there is the potential for exposure to ACM and LBP while tying into existing utility lines. No adverse impacts are anticipated.</p> <p><u>Minimizations:</u> Contact the Asbestos Operation Office for ACM/LBP survey information on areas that would be disturbed during project activities.</p>	<p>The potential for inhalation exposure to ACM and LBP would continue to occur during any repairs to the current facility.</p> <p><u>Minimizations:</u> Contact the Asbestos Operation Office for ACM/LBP survey information on areas that would be disturbed during any maintenance activities.</p>
<ul style="list-style-type: none"> Potential exposure to hazardous noise levels 	<p>Project activities are located adjacent to the Main Base flightline. Personnel working in this area may be exposed to increased noise levels generated by aircraft operations. No adverse impacts are anticipated.</p> <p><u>Minimizations:</u> Air Force Occupational Safety and Health/Occupational Safety and Health Administration hearing protection measures must be implemented for project activities that are within hazardous noise areas.</p>	<p>During any repairs to the current facility, personnel working in this area may be exposed to increased noise levels generated by aircraft operations.</p> <p><u>Minimizations:</u> Air Force Occupational Safety and Health/ Occupational Safety and Health Administration hearing protection measures would continue to be implemented for activities within hazardous noise areas.</p>
Hazardous Materials And Waste		
<ul style="list-style-type: none"> Type and amount of hazardous material used 	<p>The amount and type of hazardous material used would be similar to those already used on Edwards AFB. No adverse impacts are anticipated.</p> <p><u>Minimizations:</u> The proponent/contractor shall comply with all applicable federal, state, and local laws and regulations.</p>	<p>No change from existing conditions.</p> <p><u>Minimizations:</u> The proponent/contractor would continue to comply with all applicable federal, state, and local laws and regulations.</p>
<ul style="list-style-type: none"> Construction/demolition waste (CDW) generation 	<p>The CDW waste would be generated through construction activities. No adverse impacts to regional waste facilities are anticipated.</p> <p><u>Minimizations:</u> The contractor shall segregate and deliver recyclable materials to the appropriate reclamation facility. Solid waste shall be transported to a state-licensed facility.</p>	<p>No change from existing conditions.</p> <p><u>Minimizations:</u> During any repairs to the current facility, standard operating procedures would be followed to control the potential for FOD from CDW generation.</p>

TABLE 2 (Continued)
SUMMARY OF THE POTENTIAL ENVIRONMENTAL IMPACTS

Environmental Issue	Alternative A Construction of a New Fire Station (Proposed Action Alternative)	Alternative B No Action Alternative
Biological Resources		
<ul style="list-style-type: none"> Potential harm to desert tortoise and habitat 	<p>Project activities have the potential to impact the desert tortoise and their habitat. No adverse impacts are anticipated.</p> <p><u>Minimizations:</u> Construction personnel shall adhere to the terms and conditions of the biological opinions listed in Section 3.6.2.</p>	<p>No change from existing conditions.</p> <p><u>Minimizations:</u> No new measures are required.</p>
Geological Setting		
<ul style="list-style-type: none"> Soil disturbance/erosion 	<p>Site preparation, grading, and construction activities may disturb soil surfaces; short-term erosion may occur when soils become exposed to high winds, heavy rains, or during vehicular and equipment use. No adverse impacts are anticipated.</p> <p><u>Minimizations:</u> Suspend grading, disking, and other earthwork projects at wind speeds exceeding 25 mph.</p> <p>Vehicular traffic, grading, and digging should not be permitted in the project area during high-wind conditions.</p> <p>Exposed surfaces should be periodically sprayed with water to suppress dust.</p>	<p>No change from existing conditions.</p> <p><u>Minimizations:</u> None required.</p>
<ul style="list-style-type: none"> Environmental Restoration Program (ERP) Equipment Disturbance 	<p>Project activities have the potential to damage ERP monitoring wells and underground lines from a nearby ERP site. No adverse impacts are anticipated.</p> <p><u>Minimizations:</u> Prior to starting work on the project, proponent/contractor shall contact Environmental Management Restoration Branch to identify the location of ERP equipment. Damage to this equipment must be avoided.</p>	<p>No change from existing conditions.</p> <p><u>Minimizations:</u> None required</p>
Socioeconomic		
<ul style="list-style-type: none"> Generation of revenue into the local economy 	<p>Incremental benefit would be realized through funds spent in nearby communities. Total project cost is estimated to be approximately \$8.4 million.</p> <p><u>Minimizations:</u> None required.</p>	<p>No change from existing conditions. No new construction would occur.</p> <p><u>Minimizations:</u> None required.</p>
Infrastructure		
<ul style="list-style-type: none"> Construction equipment and materials to and from the project site have the potential to impact existing traffic patterns 	<p>Minor, short-term traffic congestion is expected when large, slow-moving vehicles travel on access roads throughout the base. No adverse impacts are anticipated.</p> <p><u>Minimizations:</u> Traffic routes should be limited.</p>	<p>No change from existing conditions. No new construction would occur.</p> <p><u>Minimizations:</u> None required.</p>

TABLE 2. (Concluded)
SUMMARY OF THE POTENTIAL ENVIRONMENTAL IMPACTS

Environmental Issue	Alternative A Construction of a New Fire Station (Proposed Action Alternative)	Alternative B No Action Alternative
Infrastructure (Concluded)		
<ul style="list-style-type: none"> Potential for interruption of utility services 	<p>Damage to existing utility lines within the project area may occur through accidental severance during earth-moving activities and would result in an interruption of service. No adverse impacts are anticipated if activities are coordinated.</p> <p><u>Minimizations:</u> Coordinate AFFTC Information Management Tool 5926, <i>Edwards AFB Civil Engineering Work Clearance Request</i> (Digging Permit), through the Civil Engineer Group.</p>	<p>No change from existing conditions. No new construction would occur.</p> <p><u>Minimization:</u> None required.</p>
Energy Resources		
<ul style="list-style-type: none"> Use of energy-efficient equipment 	<p>The incorporation of energy-saving heating and air conditioning, hot water, and energy management control systems would meet the goals of the <i>Energy Policy Act of 1992</i> (Public Law 102-486) and Executive Order 13123, <i>Greening the Government Through Efficient Energy Management</i>, 1999. It would also result in an energy and cost savings to the Air Force.</p> <p><u>Minimizations:</u> None required.</p>	<p>No change in energy efficiency of current equipment.</p> <p><u>Minimizations:</u> None required.</p>
Public/Emergency Resources		
	<p>The construction of the new fire station would be beneficial to firefighting vehicles and equipment, aiding in preventing fire, and reducing loss from fire/hazardous material incidents.</p> <p><u>Minimizations:</u> None required.</p>	<p>Current facility would limit firefighting efforts with inadequate space for personnel, vehicles, and firefighting equipment.</p> <p><u>Minimizations:</u> None required.</p>

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3.0 AFFECTED ENVIRONMENT

This section describes the relevant environmental resources at Edwards AFB that may be impacted by construction of a new fire station. This chapter establishes the baseline against which the decision maker and the public can compare the effects of all action alternatives. The following environmental attributes comprise the existing environment: Land Use, Air Quality, Water Resources, Safety and Occupational Health, Hazardous Materials and Waste, Biological Resources, Geology and Soils, Socioeconomics, Infrastructure, Energy Resources, and Public/Emergency Resources. These resources are described in the following sections.

3.1 Land Use

Land may be used for a variety of uses including residential, industrial, commercial, agricultural, recreational, and military. Specialized land uses may include administration buildings, housing, flight training facilities, developmental test and evaluation (DT&E) facilities, aircraft hangars, runways and taxiways, radio transmission areas, bombing/missile ranges, explosive ordnance ranges, and munitions storage facilities. The *Edwards Air Force Base General Plan* (AFFTC 2001a) lays out long-range development at Edwards AFB. This Plan establishes the goals, policies, plans, and anticipated action regarding the physical, social, and economic environment.

3.1.1 Regulatory Requirements/Guidance

Air Force Instruction (AFI) 13-213, *Airfield Management*, applies to all organizations that operate or administer functions and facilities for military Airfield Management.

Air Force Instruction 32-1026, *Planning and Design of Airfields*, provides guidance to personnel responsible for planning, developing, siting, and layout of runways, taxiways, aprons, pads, and support facilities for fixed- and rotary-winged aircraft. This instruction provides references to the documents that contain the criteria and standards for these facilities and establishes a waiver process for deviations from these criteria and standards.

Air Force Instruction 32-7062, *Air Force Comprehensive Planning*, contains the responsibilities and requirements for comprehensive planning and describes the procedures for developing, implementing, and maintaining the Comprehensive Plan within the installation.

Air Force Instruction 32-7063, *Air Installation Compatible Use Zone Program*, identifies the requirements to develop, implement, and maintain the Air Installation Compatible Use Zone (AICUZ) program. This instruction applies to all Air Force installations with active runways located in the U.S. and its territories, including government-owned, contractor-operated facilities.

Air Force Flight Test Center Instruction (AFFTCI) 10-2, *Control of Vehicles on the Airfield*, sets policies, procedures, and responsibilities for all agencies, including associates and contractors that operate or support vehicles on the Edwards AFB flightline.

Air Force Flight Test Center Instruction 11-2, *Ground Agency Operations*, applies to all ground agencies in support of aircraft operations at Edwards AFB. In addition, Air Force Joint Manual (AFJMAN) 24-306, *Manual for the Wheeled Vehicle Driver*; AFFTCI 10-2, *Control of*

Vehicles on the Airfield; AFI 21-101, *Aerospace Equipment Maintenance Management*; and AFFTCI 11-15, *Scheduling Procedures for Aircraft and Air/Ground Support*, contain procedures, policies, and responsibilities for all aircraft operations on Edwards AFB.

3.1.2 On-Base Land Use

Edwards AFB consists of approximately 301,000 acres in Kern, Los Angeles, and San Bernardino Counties. The base contains largely undeveloped or semi-improved land that is used to support the flight-testing of a wide variety of military, civilian, and experimental aircraft. The developed portion of the base includes approximately 6 percent of the total base area and is concentrated on the west side of Rogers Dry Lake. The developed areas include Main Base, South Base, North Base, and Air Force Research Laboratory (AFRL). The *Edwards Air Force Base General Plan* (AFFTC 2001a) establishes land use designations for the base. These land use designations, total acreage, and associated percentage of the base area is presented in Table 3.

TABLE 3.
EDWARDS AIR FORCE BASE LAND USE DESIGNATIONS

Land Use Designation	Developed Area (Acres)
Airfield clearance and explosive clear zones	2,636
Airfield pavements	646
Lakebed painted runways	1,667
Lakebed nonmaintained landing site	13,582
Aircraft operations and maintenance	597
Engineering test	1,826
Aircraft test ranges	13,654
Industrial	3,418
Administrative	73
Community (commercial)	160
Community (service)	213
Medical	70
Housing (accompanied)	918
Housing (unaccompanied)	108
Outdoor Recreation	6,580
Buffer Zones	13,823
Water	0
Total	59,971

Note: Source: *Edwards Air Force Base General Plan* (AFFTC 2001a)

Within these various land use designations, specific areas have been set aside for particular purposes. These include, but are not limited to, areas such as the Off-Road Vehicle Areas (ORVA) 1 and 2, Combat Arms Range, hunting and fishing areas, Precision Impact Range Area (PIRA), and AFRL (Figure 4).

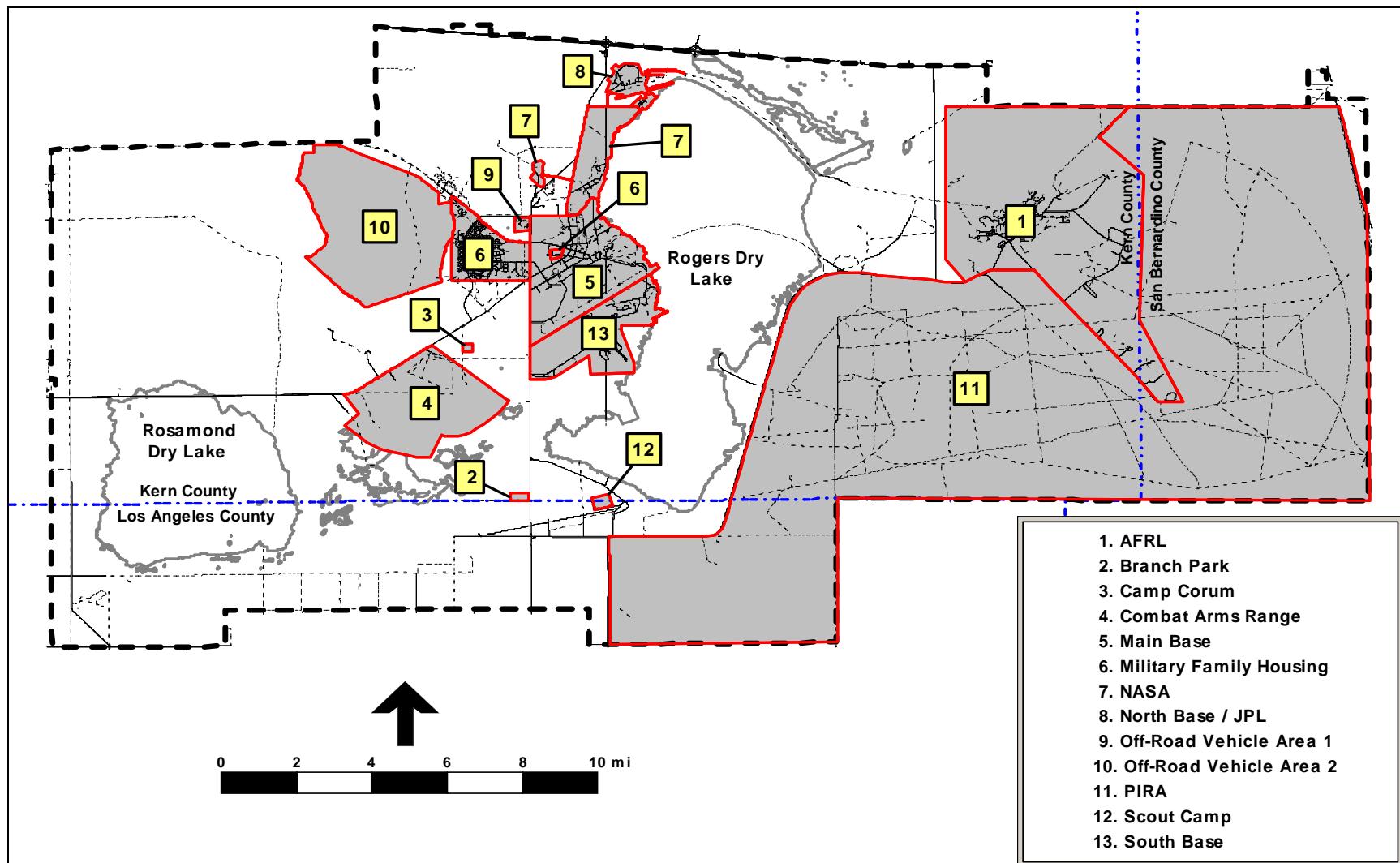


Figure 4. On-Base Land Use Areas

3.1.2.1 Land Use Restrictions

Air Force land use policies and guidance are only applicable to lands under their control. Policies established for airfields are similar to the criteria established by the Federal Aviation Administration (FAA) for development of surrounding civilian airports. Air Force Joint Manual 32-1013, *Airfield and Heliport Planning and Design Criteria*, sets the minimum requirements for airfield and applicable land uses for the areas surrounding the airfield. The Edwards AFB Planning and Zoning Committee grants final siting approval for all construction and activity related to projects as part of the review and approval process.

Edwards AFB has three runways, which provide the principal landing surfaces for the base. These runways are divided into two different classes: A and B. The primary difference between the Class A and Class B runways is determined by the type of aircraft using the runway. Class A runways are primarily used for small light aircraft. Class B runways are primarily intended for high performance and large, heavy aircraft. The Main Base runway is a Class B runway and the primary airstrip. The North and South Base runways are Class A runways.

3.1.2.2 Architectural Compatibility

The *Design Standards of the Edwards Air Force Base Comprehensive Plan* (AFFTC 1997) have been prepared and adopted as part of the Edwards AFB Comprehensive Plan in order to:

- a. Ensure consistency in the construction and design of buildings, their interiors, and infrastructure systems throughout Edwards AFB; and
- b. Create a common level of understanding on how to design future projects at Edwards AFB (AFFTC 1997).

The design standards deal with all aspects of facility development, from new construction and design, to additions and remodeling. For new construction, the general approach taken in the standard targets development of modernized facilities, which incorporate solar control features such as deep overhangs, recessed windows, and protected entrances and exits. The recommended scale is generally low, with a marble crème color and redwood-colored low-hip roofs. Composite building panels in a marble crème color are acceptable for building wall construction; redwood is the preferred accent color. This approach is characterized as a modern southwest style with features softer than the flat roof box look of the traditional southwest style.

3.1.3 Airfield Operations

Flightline operations are carried out by the 412th Test Wing and the 95th Air Base Wing. The 412th Test Wing is the direct mission organization of the AFFTC and is responsible for DT&E of manned and unmanned aerospace vehicles, subsystems, and components. The 95th Air Base Wing is the support unit on Edwards AFB that is responsible for communications, civil engineering, environmental management, transportation (including loading and unloading or armament and supplies), fuel supply, security forces, and fire protection.

3.1.3.1 Foreign Object Damage Control

Foreign object damage refers to damage, particularly to aircraft, that occurs because of collision with or ingestion of objects on or around runways, taxiways, and other areas of aircraft operations. The prevention of FOD is targeted specifically at flightline areas and implementation procedures are contained in the AFFTC Supplement 1 to AFI 21-101, *Aerospace Equipment Maintenance Management*. The Quality Assurance Inspection Branch manages the reduction and/or elimination of FOD.

Material or debris such as nuts, bolts, screws, wood, trash, or pieces of concrete or asphalt may end up on runways, taxiways, or apron areas because of routine operations, construction, and/or demolition activities. These objects can puncture tires or damage engines, potentially damaging aircraft, and causing possible injury or death to personnel.

3.1.4 Noise (Annoyance)

Sound can vary simultaneously in level (or loudness) and frequency content (pitch), while also varying in time of occurrence and duration. The fundamental measure of sound levels is expressed in units of decibels (dB) using a logarithmic scale. Common sounds vary in amplitude over a range of many millions. For instance, an aircraft flyover may produce pressure amplitude a hundred times greater than a car driving by on a nearby street. On the logarithmic scale, these noise sources would differ by 40 dB.

Noise is generally defined as sound that is undesirable because it:

- a. Is intense enough to damage hearing,
- b. Interferes with speech communication and sleep, or
- c. Is annoying.

The Federal Interagency Committee on Urban Noise has developed land use compatibility guidelines for noise and provides recommended day-night average sound level (DNL) ranges for various land use categories based on this committee's findings. The DNL values of 65 dB and less are generally compatible with all types of land uses. Residential, public, and some types of recreational land uses (e.g., outdoor music amphitheaters and nature reserves) are not generally considered compatible with yearly DNL ranges in excess of 65 dB. Commercial, industrial, and other types of recreational land uses (e.g., sports arenas, golf courses, and amusements parks) are generally considered compatible with yearly DNL ranges between 70 and 75 dB if measures are incorporated into the design and construction of structures associated with these land uses. Some transportation (e.g., railways and airports) and manufacturing land uses (e.g., mining, nonlivestock agriculture, fishing, and forestry) can tolerate yearly DNL ranges in excess of 85 dB. Figure 5 compares the relative noise of common sounds.

The primary noise sources on Edwards AFB are subsonic and supersonic aircraft operations. Secondary sources include surface traffic, rail service operations, engine runups and other tests, and equipment required for ground facility operations. Existing noise contours at Edwards AFB are based on flightline operations and can be seen in Figure 6. Ambient noise levels in the developed portions of the base are presented in Table 4.

Common Outdoor Sound Levels

Common Indoor Sound Levels

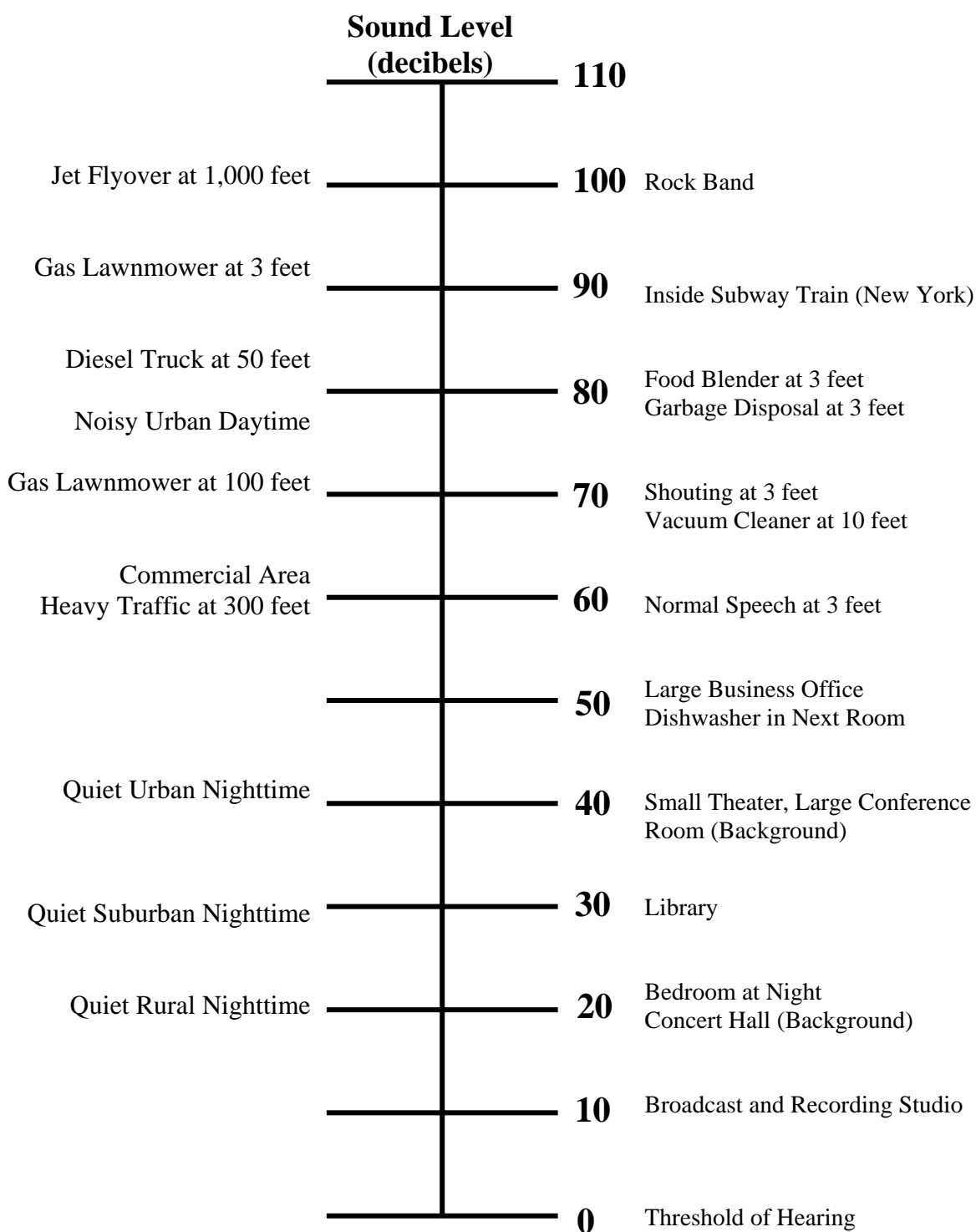


Figure 5. Comparative Levels of Common Sound

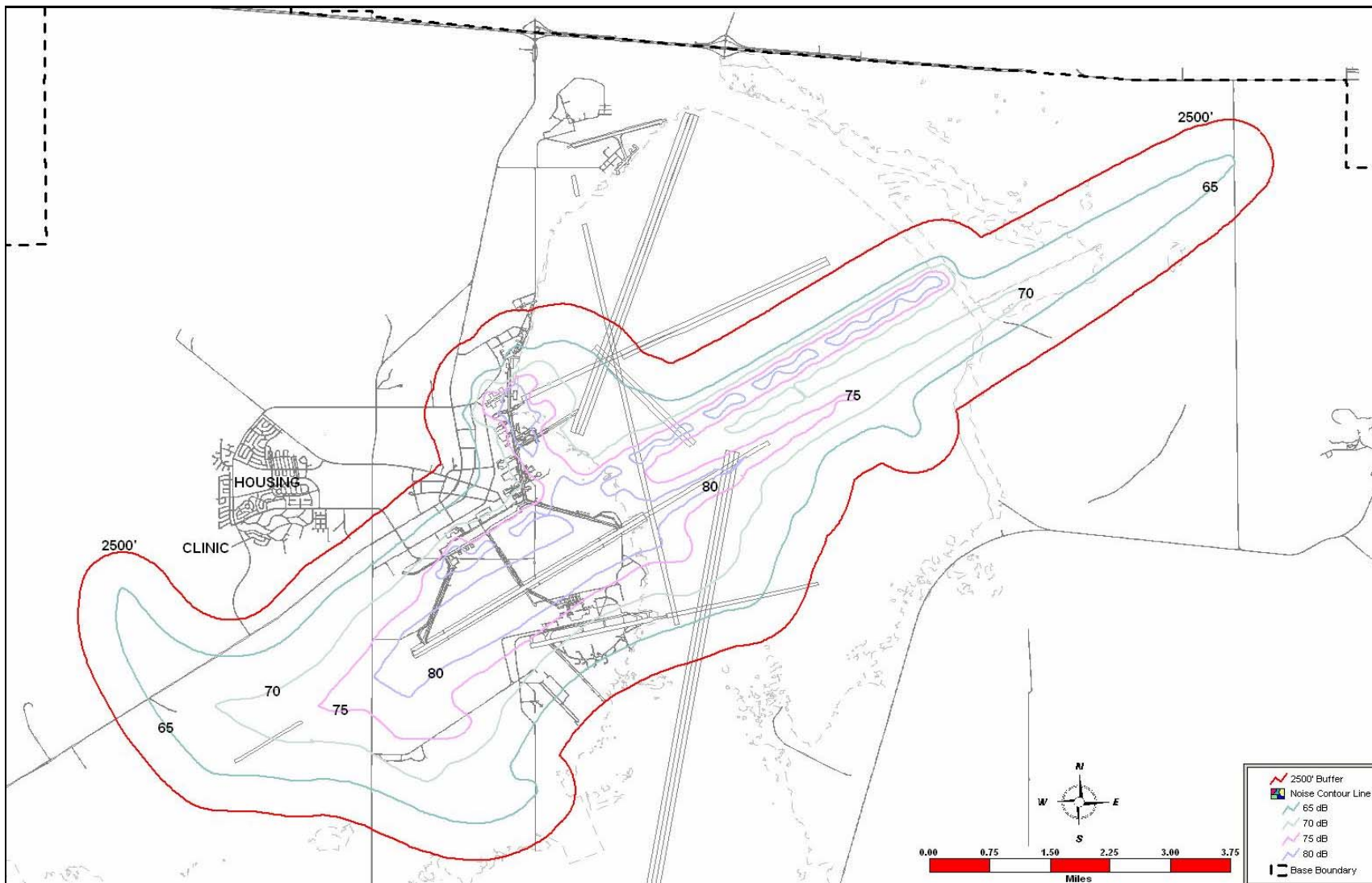


Figure 6. Noise Contour Map

TABLE 4.
AMBIENT (BACKGROUND) NOISE LEVELS RECORDED AT
VARIOUS BASE LOCATIONS

Location	L_{dn}
Edwards AFB housing area and vicinity	
Back of Community Health Clinic	67.7
Unpaved parking area near schools	36.9
Northeast of the hospital dormitory	61.7
Intersection of Forbes Avenue and Yeager Boulevard	61.5
Chapel	53.6
Golf Course	54.3
Main Base	
Building 1200 (Base Operations/Base Exchange Cafeteria)	68.8
Building 1632 (Aircraft Research Engineering Maintenance Facility)	75.6
North Base	
Near JPL Building 4231 (Satellite Communications Ground Terminal)	60.6
Near Taxiway/Runway Intersection	57.2
At Building 4444 (Research Equipment Storage)	65.0
South Base	
B-2 Area	67.9
Main Runway (Southeast of Main Runway)	72.4
Inactive Runway	60.8
Air Force Research Laboratory	
Near Building 8255 (Equipment Research Engineering)	54.7
Near Building 8483 (Missile in Space Research Support)	46.1
NASA/Dryden Flight Research Center	
Near Building 4850 (NASA Child Development Center)	65.5

Notes: 1. L_{dn}—the day/night equivalent noise level. It incorporates a 10-decibel penalty for nighttime noise between 10 pm and 7 am to reflect the added likelihood of annoyance during this period.

2. AFB—Air Force Base

3. JPL—Jet Propulsion Laboratory

4. NASA—National Aeronautics and Space Administration

5. USACE—United States Army Corp of Engineers

6. AFFTC—Air Force Flight Test Center

7. Source: *Programmatic Environmental Assessment for the Comprehensive Plan of Edwards Air Force Base, California* (USACE and AFFTC 1994)

Noise sensitive receptors at Edwards AFB include military family housing, dormitories, community health clinic, schools, child development center, and chapels. The location of the proposed action is within the Main Base flightline area; and therefore, will not be in the vicinity of the noise sensitive receptors and will not impact them.

3.2 Air Quality

Air quality in California is regulated by the United States Environmental Protection Agency, (U.S. EPA), California Air Resources Board (CARB) and locally by Air Pollution Control Districts (APCDs) or Air Quality Management Districts (AQMD).

Stationary sources at Edwards AFB typically include fixed sources such as internal combustion engine (ICE) generators, external combustion boilers, and spray paint booths. Mobile sources typically include motor vehicles, construction equipment, and aircraft.

3.2.1 Regulatory Requirements/Guidance

The 1970 *Clean Air Act* (CAA) and the 1990 *Clean Air Act Amendments* (CAAA) (Title 42 U.S.C. 7401–7671 and 42 U.S.C. 7661) are the body of federal laws that require the U.S. EPA and state to regulate air pollution emissions from stationary and mobile sources to protect public health and welfare. Air quality regulations were first promulgated with the CAA and revised with the CAAA. They are published in 40 CFR, Parts 50 to 97 and 1039 to 1068, *Air Pollution Controls*.

The federal CAA requires the U.S. EPA to establish and maintain national ambient air quality standards (NAAQS) that are used to manage air quality across the country. Under the *California Clean Air Act* (CCAA), California Health and Safety Code, Division 26, the State of California has adopted ambient air quality standards, known as the California Ambient Air Quality Standards (CAAQS), which are published in the California Code of Regulations (CCR), Title 17, Section 70200, *Table of Standards*. Generally, CAAQS are more stringent than NAAQS. Pollutants for which standards have been established are termed “criteria” pollutants because the standards are based on criteria that show a relationship between pollutant concentrations and effects on health and welfare. From this relationship, the U.S. EPA and the state establish acceptable pollutant concentration levels to serve as ambient air quality standards.

Title 40 CFR, Part 61, *National Emission Standards for Hazardous Air Pollutants*, states that in addition to complying with the provisions of this Part, the owner or operator of a stationary source subject to standards in this Part, may be required to obtain an operating permit issued to stationary sources by an authorized state air pollution control agency or by the Administrator of the U.S. EPA pursuant to Title V of the CAA as amended 15 November 1990 (42 U.S.C. 7661).

Under the CAAA of 1990, Title V requires air agencies to establish federal operating permit programs and require major sources of air pollutant to obtain Title V operating permits. A Title V permit is an all-encompassing permit that includes all local air district permits and regulatory requirements and documents compliance with other CAA regulations.

Title I of the federal CAA (42 USC 7411.C.1) requires states with nonattainment areas to develop State Implementation Plans (SIPs); describing the measures the state will take to achieve attainment with NAAQS. The California Health and Safety Code (CH&SC) identifies the CARB as the agency of air pollution control regarding all matters promulgated by federal law (CH&SC 93602). Local districts prepare SIP elements for the areas under their regulatory jurisdiction and submit these elements to the CARB for review and approval. The CARB then incorporates the individual air district elements into a statewide SIP. The SIP is then submitted to the U.S. EPA for

approval and publication in the Federal Register. The local districts then enact rules and regulations to achieve their SIP requirements.

The NAAQS nonattainment status of the air districts with jurisdiction over Edwards AFB is presented in Figure 7. As indicated previously, the KCAPCD is designated basic/subpart 1 nonattainment for the 8-hour ozone NAAQS, and in attainment or unclassified for all other pollutants.

3.2.2 Environmental Setting

The AQMD and APCD boundaries are based on meteorological and geographic conditions and, where possible, jurisdictional boundaries such as county lines. Edwards AFB lies within the Mojave Desert Air Basin (MDAB). As shown in Figure 8, Edwards AFB is located within the jurisdiction of three local air districts: KCAPCD, Mojave Desert Air Quality Management District (MDAQMD) and Antelope Valley Air Quality Management District (AVAQMD). The MDAQMD has jurisdiction in San Bernardino County including the eastern portion of Edwards AFB, and the AVAQMD has jurisdiction including the Los Angeles County portion of Edwards AFB.

Project activities would occur almost exclusively in the eastern Kern County portion of Edwards AFB under the jurisdiction of the KCAPCD. As a result, this air quality analysis refers almost exclusively to regulatory requirements and air quality impacts in the KCAPCD area. However, there is some potential for construction delivery and haul vehicles to travel and generate air emissions in the AVAQMD. Because these emissions result from mobile sources, the only AVAQMD air quality regulatory requirements that might influence this travel and associated emissions are those associated with General Conformity (AVAQMD Rule 1901). As a result, only the subsections discussing General Conformity will refer to regulatory requirements and air quality impacts in the AVAQMD.

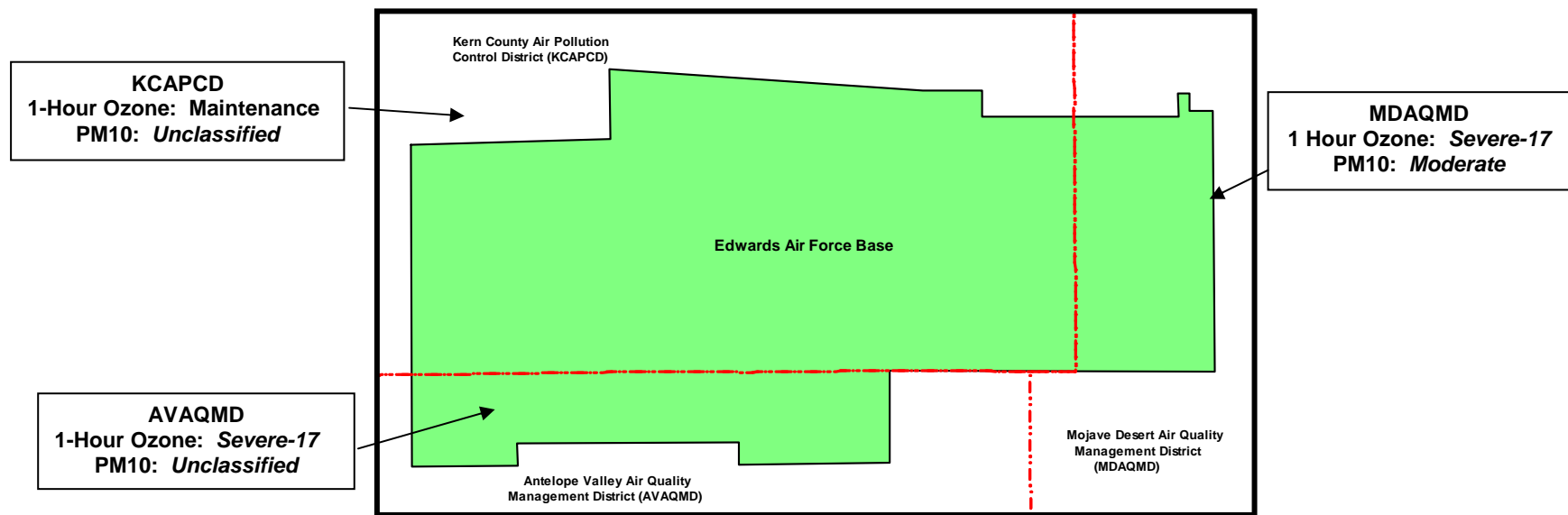
3.2.2.1 Climate

The Mojave Desert is sheltered from maritime weather influences of the Pacific Ocean by the Coastal range to the west and the San Gabriel Mountains to the south. The MDAB has an arid continental desert climate.

The climate of the Mojave Desert is governed by the strength and location of a semipermanent, subtropical, high-pressure cell over the Pacific Ocean. In general, hot summers, cold winters, infrequent rainfall, active air movement, and very low relative humidity characterize the climate of most of the region.

Thunderstorm activity in the region is rare. Relative humidity at the base is very low in the summer (30 to 50 percent in the early morning; 10 to 20 percent in the late afternoon). These conditions promote intensive heat during the day in the summer and marked cooling at night. The intense solar radiation in the summer is highly conducive to the formation of ozone and other photochemical oxidants in the atmosphere, but only when precursor chemicals are present.

EDWARDS AFB Current NAAQS Attainment Status



LEGEND

Severe-17—25-ton limit per pollutant per action per year

Maintenance—100-ton limit per pollutant per action per year

Moderate—100 ton-limit per pollutant per action per year

Unclassified—no established limit

SOURCE: 40 Code of Federal Regulations 81.305

Figure 7. Attainment Status Map

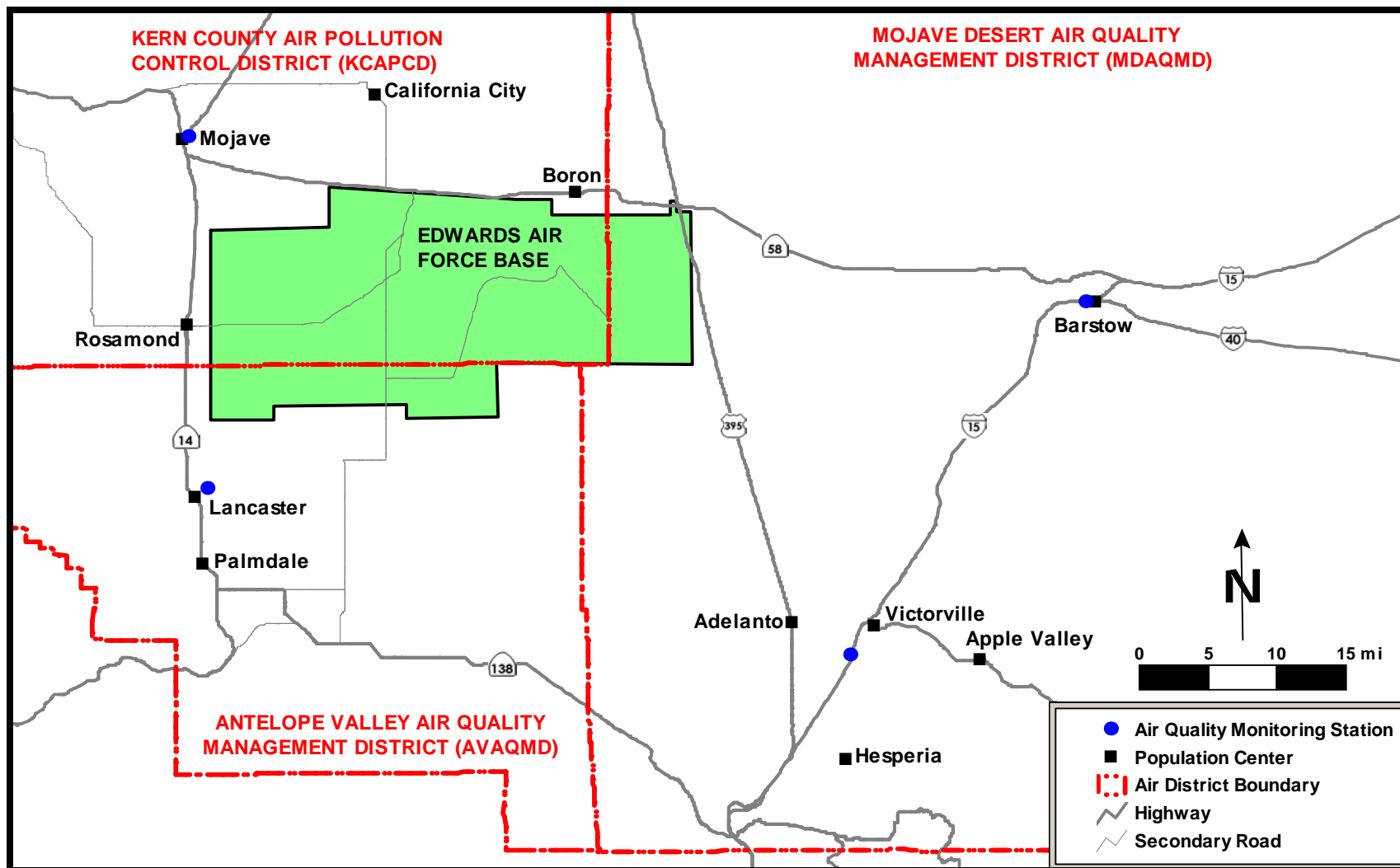


Figure 8. Air District Map

3.2.2.2 Wind/Pollutant Dispersion

The prevailing wind direction is from the west-southwest (240 degrees) throughout the year with an average windspeed of 8 miles per hour (mph). The highest average windspeeds occur during the spring and summer, with the lowest windspeeds occurring during the winter. Calm occurs about 19.3 percent of the time on an annual basis. Vertical dispersion of pollutants is described by the measure of atmospheric stability. Stable conditions indicate weak pollutant dispersion, which exist 57 percent of the time at Edwards AFB.

Area mountain and valley patterns cause a wide fluctuation in the levels of rainfall, and temperatures influence basin wind flow that in turn affect dispersion along mountain ridges, vertical mixing, and photochemistry of pollutants.

The Tehachapi Pass in the Tehachapi Mountains and the pass through Saugus on Highway 14 serve as conduits allowing air movement from the San Joaquin Valley and the Los Angeles areas into the western portion of the MDAB. This air movement allows pollutant transport from the San Joaquin Valley and the Los Angeles basin to influence the air quality of the MDAB. Air pollution also enters the Antelope Valley from the San Bernardino area through the Cajon Pass, (*Clean Air Act Conformity Analysis, Edwards AFB, California*) (AFFTC 1995a).

3.2.3 Baseline Air Quality

Air quality in a given location is described by the concentration of various pollutants in the atmosphere, generally expressed in units of parts per billion (ppb) or micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). Air quality is determined by the type and amount of pollutants emitted into the atmosphere, size and topography of the air basin, and prevailing meteorological conditions. The significance of the pollutant concentration is determined by comparing it to the NAAQS and CAAQS. These standards represent the maximum allowable atmospheric concentrations that may occur while ensuring protection of public health and welfare, with a reasonable margin of safety.

The U.S.EPA has developed numerical concentration-based NAAQS for seven criteria pollutants under the provisions of the CAA. The NAAQS have been established for O_3 , PM_{10} , fine particulate matter equal to or less than 2.5 microns ($\text{PM}_{2.5}$), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead (Pb).

The CARB has developed numerical concentration-based CAAQS for the same seven criteria pollutants plus visibility reducing particles, sulfates, hydrogen sulfide, and vinyl chloride. The criteria pollutants and state and federal standards are listed in Table 5.

The CARB and U.S. EPA track air quality on an ongoing basis and designate areas or basins as either attainment or nonattainment, on a pollutant-specific basis, in accordance with either CAAQS or NAAQS. As indicated previously, for some pollutants an area can be designated as a basic, moderate, serious, severe, or extreme nonattainment area depending upon the level of pollutant concentrations. Likewise, if standards for pollutants are met in a particular area, the area is designated at attainment. Where standards may not have been established, or monitoring data does not exist for certain criteria pollutants, these areas are considered unclassified. Unclassified areas are treated as attainment areas until proven otherwise. Table 6 presents the attainment status of eastern Kern County for criteria pollutants.

TABLE 5.
FEDERAL AND CALIFORNIA AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards ¹		Federal Standards ²		
		Concentration ³	Method ⁴	Primary ^{3,5}	Secondary ^{3,6}	Method ⁷
Ozone (O ₃)	1 Hour	0.09 ppm (180 µg/m ³)	Ultraviolet Photometry	N/A	Same as Primary Standard	Ultraviolet Photometry
	8 Hours	0.07 ppm (137 µg/m ³)		0.08 ppm (157 µg/m ³) ⁸		
Respirable Particulate Matter (PM10)	24 Hours	50 µg/m ³	Gravimetric or Beta Attenuation	50 µg/m ³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m ³ *		150 µg/m ³		
Fine Particulate Matter (PM2.5)	24 Hours	No Separate State Standard		65 µg/m ³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m ³ *	Gravimetric or Beta Attenuation	15 µg/m ³		
Carbon Monoxide (CO)	8 Hours	9 ppm (10 mg/m ³)	Nondispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m ³)	None	NDIR
	1 Hour	20 ppm (23 mg/m ³)		35 ppm (40 mg/m ³)		
	8 Hours (Lake Tahoe)	6 ppm (7 mg/m ³)		N/A		N/A
Nitrogen Dioxide (NO ₂)	Annual Arithmetic Mean	N/A	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m ³)	Same as Primary Standard	Gas Phase Chemiluminescence
	1 Hour	0.25 ppm (470 µg/m ³)		N/A		
Sulfur Dioxide (SO ₂)	Annual Arithmetic Mean	N/A	Ultraviolet Fluorescence	0.03 ppm (80 µg/m ³)	N/A	Spectrophotometry (Pararosaniline Method)
	24 Hours	0.04 ppm (105 µg/m ³)		0.14 ppm (365 µg/m ³)	N/A	
	3 Hours	N/A		N/A	0.5 ppm (1300 µg/m ³)	
	1 Hour	2.25 ppm (655 µg/m ³)		N/A	N/A	N/A
Lead (Pb) ⁹	30-Day Average	1.5 µg/m ³	Atomic Absorption	N/A	N/A	N/A
	Calendar Quarter	N/A		1.5 µg/m ³	Same as Primary Standard	High Volume Sampler and Atomic Absorption
Visibility Reducing Particles	8 Hours	Extinction coefficient of 0.23 per kilometer-visibility of 10 miles or more (0.07 per kilometer-visibility, 30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 per percent. Method: Beta Attenuation and Transmittance through Filter Tape.		No federal standards		
Sulfates	24 Hours	25 µg/m ³	Ion Chromatography			

TABLE 5. (Concluded)
FEDERAL AND CALIFORNIA AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards ¹		Federal Standards ²		
		Concentration ³	Method ⁴	Primary ^{3,5}	Secondary ^{3,6}	Method ⁷
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m ³)	Ultraviolet Fluorescence	No federal standards		
Vinyl Chloride ⁹	24 Hours	0.01 ppm (26 µg/m ³)	Gas Chromatography			

Notes: 1. ppm—parts per million
2. µg/m³—1 x 10⁻⁶ grams per cubic meter
3. N/A—Not Applicable
4. mg/m³—milligrams/per cubic meter
5. Source: California Air Resources Board, web page 25 June 2006

¹California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1 and 24 hours), nitrogen dioxide, suspended particulate matter—PM₁₀, PM_{2.5}, and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the *Table of Standards* in Section 70200 of Title 17 of the California Code of Regulations.

²National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. For PM₁₀, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m³ is equal to or less than one. For PM_{2.5}, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current federal policies.

³Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25 degrees Celcius and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25 degrees Celcius and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

⁴Any equivalent procedure that can be shown to the satisfaction of the Air Resources Board (ARB) to give equivalent results at or near the level of the air quality standard may be used.

⁵National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

⁶National Secondary Standards: The levels of air quality necessary to protect the public welfare from any know or anticipated adverse effects of a pollutant.

⁷Reference method is as described by the U.S. EPA. An “equivalent method” of measurement may be used but must have a “consistent relationship to the reference method” and must be approved by the U.S. EPA.

⁸New federal 8-hour ozone and fine particulate matter standards were promulgated by U.S. EPA on 18 July 1997. Contact the U.S. EPA for further clarification and current federal policies.

⁹The ARB has identified lead and vinyl chloride as “toxic air contaminants” with no threshold of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

TABLE 6.
ATTAINMENT STATUS OF EASTERN KERN COUNTY

Pollutant	Federal Status	State Status
Ozone (O ₃)–1-hour	Not Applicable (Standard revoked)	<i>Moderate</i> Nonattainment
Ozone (O ₃)–8-hour	<i>Basic/Subpart 1</i> Nonattainment	Not Applicable
Respirable Particulate Matter (PM ₁₀)	Unclassified	Nonattainment
Fine Particulate Matter (PM _{2.5})	Unclassified ¹	Unclassified ¹
Carbon Monoxide (CO)	Unclassified/Attainment	Unclassified
Nitrogen Dioxide (NO ₂)	Unclassified/Attainment ²	Attainment ²
Sulfur Dioxide (SO ₂)	Unclassified/Attainment ²	Unclassified ²
Lead ⁴	Attainment	Attainment ²

Note: Source: California Air Resources Board web page, 26 June 2006

¹PM_{2.5} attainment status is not currently classified.

²All areas in the state are either attainment or unclassified for nitrogen dioxide, sulfur dioxide, and lead.

3.2.3.1 California State Implementation Plan

The California O₃ SIP was approved by the U.S. EPA in September 1996 and codified into law in 40 CFR 52, Subpart F.

On 15 April 2004, the U.S. EPA designated eastern Kern County as *basic Subpart 1* nonattainment for the 8-hour ozone NAAQS (40 CFR 81). The KCAPCD will be required to prepare a *basic Subpart 1* attainment plan for U.S. EPA approval by June 2007. On June 15, 2005, the 1-hour ozone NAAQS was revoked by the U.S. EPA.

Other criteria pollutants not subject to SIP requirements implemented to achieve NAAQS include CO, NO₂, SO₂ and Pb because all are either in *attainment* or *unclassified*.

3.2.3.2 Ozone

Ozone is what is referred to as a secondary pollutant, a pollutant formed in the atmosphere by photochemical reactions involving previously emitted pollutants or precursors. Ozone precursors are mainly two types, VOCs and NO_x. Volatile organic compounds are organic compounds that contain carbon and hydrogen. The U.S. EPA defines a VOC as any organic compound that participates in atmospheric photochemical reactions. Nitrogen oxide is the designation given to the group of all oxygenated nitrogen species, including nitric oxide, nitrogen dioxide, nitric anhydride, and nitrous anhydride. Since VOCs and NO_x participate in atmospheric photochemical reactions that produce ozone, the attempt is made to control ozone through the control of VOCs and NO_x. Therefore, the pollutants of concern are VOCs and NO_x.

Identifying the region of influence for air quality assessment requires knowledge of the pollutant types, source emission rates and release parameters, and local and regional meteorological conditions. For inert pollutants (all pollutants other than ozone, its precursors, and NO₂), the region of influence is generally limited to an area within a few miles downwind from the

source. The region of influence for ozone may extend much farther downwind than that for other pollutants. In the presence of solar radiation, the maximum effect of precursor emissions on ozone levels usually occurs several hours after they are emitted and many miles from the source.

Ozone and its precursors transported from other regions can also combine with local emissions to produce high local ozone concentrations. Ozone concentrations are generally the highest during the summer months and coincide with periods of maximum solar radiation. The maximum effect of precursor emissions on ozone levels usually occurs several hours after they are emitted and many miles from the source. Maximum ozone concentrations tend to be regionally distributed because precursor emissions are homogeneously dispersed in the atmosphere (AFFTC 1995a). Ozone may pose a health threat to those who already suffer from respiratory diseases as well as healthy people.

On 15 April 2004, the U.S. EPA designated eastern Kern County as *basic/Subpart 1* nonattainment for the 8-hour ozone NAAQS. Under State regulations, the eastern Kern County area is designated *moderate* nonattainment for ozone. The area is attainment for PM₁₀ under Federal regulations, but is nonattainment under State standards.

3.2.3.3 Particulate Matter

Particulate matter consists of very small liquid and solid particles in the air. Particulate matter less than 10 microns in diameter are referred to as PM₁₀. Sources of PM₁₀ include motor vehicles, wood-burning stoves and fireplaces, construction, landfills, agriculture, wildfires and bush/waste burning; industrial sources, windblown dust from open lands, and paved and unpaved roads. Health effects may include increased respiratory disease, lung damage, and cancer. Particulate matter 2.5, also called fine particles, means suspended particles in the air with diameters of 2.5 µm or less. These sources cause the formation of carbon (soot), organic carbon particles, trace metal compounds, and ammonium sulfate and nitrate particles.

The measurement of existing ambient criteria pollutant concentrations is accomplished using air quality monitoring stations. The closest CARB air quality monitoring station to Edwards AFB is located in Mojave, California. Table 7 shows the 2003 through 2005 data received at the monitoring station for criteria pollutants as they relate to NAAQS and CAAQS and the number of times the criteria pollutants measured at the Mojave Air Station equaled or exceeded the standards for a given year. For the purpose of this EA, these data are provided as information only. The data are only provided to illustrate the current ambient air quality in the Edwards AFB area.

3.2.3.4 Conformity Requirements

Under the conformity provisions of the CAAA, no federal agency can approve or undertake a federal action, or project, unless the project has been demonstrated to conform to the applicable SIP. These conformity provisions were put in place to ensure that federal agencies contribute to efforts to attain the NAAQS. The U.S. EPA has issued two conformity guidelines: transportation conformity rules that apply to transportation plans and projects and general conformity rules that apply to all other federal actions. A conformity determination¹ is only

¹A conformity determination is a process that demonstrates how an action would conform to the applicable implementation plan. If the emissions cannot be reduced sufficiently, and if air dispersion modeling cannot demonstrate conformity, then either a plan for mitigating or a plan for offsetting the emissions would need to be pursued.

TABLE 7.
NUMBER OF DAYS MOJAVE AIR STATION WAS ABOVE THE HOURLY
STANDARD FOR CRITERIA POLLUTANTS

CRITERIA POLLUTANT	DAYS EQUAL TO/OR EXCEEDING AIR QUALITY STANDARDS	
	NAAQS	CAAQS
Ozone (O ₃)	27 (2003) 3 (2004) 9 (2005) 5 (2006) ³	31 (2003) 8 (2004) 8 (2005) 4(2006) ³
Respirable Particulate Matter (PM ₁₀)	0 (2003) 0 (2004) 0 (2005)	2 (2003) 0 (2004) 0 (2005)
Fine Particulate Matter (PM _{2.5})	0 (2003) 0 (2004) 0 (2005)	Not applicable
Nitrogen Dioxides	Not applicable	0 (2003) 0 (2004) 0 (2005)

Notes: 1. NAAQS–National Ambient Air Quality Standard
2. CAAQS–California Ambient Air Quality Standard
3. As of June 25th, 2006
4. Source: California Air Resources Board web page 25 June 2006

required for the alternative that is ultimately selected and approved. The general conformity determination is submitted in the form of a written finding, issued after a minimum 30-day public comment period on the draft determination.

Applicable only in areas designated as nonattainment or maintenance for NAAQS, the general conformity rule prohibits any federal action that does not conform to the applicable Air Quality Attainment Plan or SIP. General conformity applicability analysis required quantification of construction and operation emissions for the project and comparison of these emission levels to baseline emission levels. If the differences in emissions exceed the general conformity *de minimis* levels for the peak year or any milestone year for attainment of standards, additional general conformity determination is required.

A project is exempt from the conformity rule (presumed to conform) if the total net project-related emissions (construction and operation) pass two tests: they are less than the *de minimis* thresholds established by the conformity rule and they are not regionally significant (emissions are regionally significant if they exceed 10 percent of the total threshold emission inventory). A project that produces emissions that exceed conformity thresholds, or is regionally significant, is required to demonstrate conformity with the SIP through minimization or other accepted practices.

A project is presumed to conform, if the emissions (construction and operation) are less than the *de minimis* thresholds established by the conformity rule and they are not regionally significant

(equal or less than 10 percent of the total emission inventory). Any emissions that exceed conformity thresholds, or are regionally significant, are required to demonstrate conformity with the SIP through minimization or other accepted practices.

In Kern County, the ozone precursor emissions, NO_x and VOC, are subject to general conformity requirements. In accordance with the air conformity requirements of 40 CFR 51.853/93.153(b)(1) and KCAPCD Rule 210.7, the *de minimis* levels set for the O₃ attainment/maintenance areas is up to 100 tons per O₃ precursor pollutant (NO_x and VOC) per year per Federal action. The same *de minimis* level has been assumed for the basic nonattainment area.²

The 1994 California SIP includes KCAPCD data from the 1990 planning emission inventory. Table 8 presents the baseline inventory and 10 percent threshold values.

TABLE 8.
1990 BASELINE AND 10-PERCENT THRESHOLD VALUES FOR KERN COUNTY

1990 Baseline Values (tons/year)			10-Percent Threshold (tons/year)		
NO _x	VOC	PM10	NO _x	VOC	PM10
14,965	6,205	N/A	1,496.5	620.5	N/A

Notes: 1. NO_x—oxides of nitrogen

2. VOC—volatile organic compound

3. PM10—particulate matter less than or equal to 10 microns

4. KCAPCD—Kern County Air Pollution Control District

5. N/A—Not Applicable

6. Source: California Air Resource Board 1994, California SIP for O₃. Submitted to U.S. EPA on 15 November 1994. Accessed at <http://www.arb.ca.gov/planning/sip/94sip/94sip.htm> on 21 June 2004.

3.2.4 Local District Regulation

To ensure compliance with relevant federal and state air laws, each district enacts their own rules and regulations. Local air districts use stationary source New Source Review (NSR) permits, such as authority to constructs (ATCs) and permits to operate (PTOs) as means of implementing air quality rules and regulations. In addition, districts like the KCAPCD may develop guidelines for environmental review of proposed projects under the *California Environmental Quality Act* (CEQA).

For KCAPCD, NSR is implemented under KCAPCD Rule 210.1, *New and Modified Stationary Source Review (NSR)*. These rules and regulations provide for the preconstruction review of new and modified stationary sources of affected air pollutants to ensure emissions would not interfere with the attainment of ambient air quality standards; ensure appropriate new and modified sources of affected pollutants are constructed with the best available control technology (BACT); and provide for no net increase in emissions from new and modified stationary sources for all nonattainment pollutants and their precursors.

²The U.S. EPA has not yet ruled on *de minimis* levels for basic nonattainment areas, but it can be assumed that the same levels would be allowed for basic nonattainment areas as are currently allowed for *moderate* nonattainment areas.

In order to enforce these rules, the air districts have established baseline emission levels for new or modified stationary sources of PM₁₀, sulfur oxides (SO_x), NO_x, and VOCs in nonattainment areas (Table 9). Projects that generate emissions in excess of these threshold levels would require offsets.

TABLE 9.
NEW SOURCE REVIEW THRESHOLD EMISSION LEVELS

	New Source Review Threshold Emission Levels per Pollutant (tons/year)			
Air District	PM₁₀	SO_x	VOC	NO_x
KCAPCD	15	27	25	25

Notes: 1. PM₁₀—particulate matter less than or equal to 10 microns

2. SO_x—sulfur oxides

3. VOC—volatile organic compounds

4. NO_x—oxides of nitrogen

5. KCAPCD—Kern County Air Pollution Control District

6. Source: KCAPCD Rules and Regulations 2004—<http://www.arb.ca.gov/DRDB/KER/CURHTML/R210-1.HTM>

3.2.4.1 Toxic Air Contaminants and Hazardous Air Pollutants

The 1990 CAAA lists 189 total pollutants that are defined as hazardous air pollutants (HAPs) and requires the U.S. EPA to set standards for categories and subcategories of sources that emit HAPs. The U.S. EPA and California agencies have written regulations to evaluate, and if necessary, mitigate toxic air contaminant (TAC) emission sources. Prior to the 1990 CAAA, the U.S. EPA conducted a program to establish National Emission Standards for Hazardous Air Pollutants (NESHAP). The NESHAP were established for benzene, vinyl chloride, radionuclides, mercury, asbestos, beryllium, inorganic arsenic, radon 222, and coke oven emissions. The U.S. EPA began issuing the new standards in November 1994. The NESHAP set prior to 1991 remain applicable.

The applicability of a NESHAP to a facility operation is determined by the potential to emit (PTE) HAPs from all applicable sources. The HAP PTE threshold values are 10 tons per year for a single HAP and 25 tons per year for any two or more HAPs.

Based on its PTE, Edwards AFB is defined as a major source of HAPs and must comply with any applicable NESHAP. One NESHAP that applies to Edwards AFB is the Aerospace NESHAP (40 CFR Part 63, Subpart GG). This NESHAP controls HAP emissions resulting from aerospace manufacturing and rework facilities.³

In California, Assembly Bill (AB) 1807, the *Tanner Act of 1983*, established the State Air Toxics Program for identifying and developing emissions control and reduction methods for TACs. The Bill formally designated 18 substances as TACs. In 1993, the 189 HAPs identified by the U.S. EPA were incorporated into California law as TACs. Other pollutants have been

³Typical processes and operations at Edwards AFB include hand-wipe and spray-gun cleaning, primer and topcoat application, paint stripping, waste storage and handling, and chemical milling maskant.

added more recently, such as particulate emissions from diesel-fueled engines, designated by California as a carcinogen. In the state of California, the TACs include airborne inorganic and organic compounds that can have both short-term (acute) and long-term (carcinogenic, chronic, and mutagenic) effects on human health.

The California Air Toxic Hot Spots Program was created by the *Air Toxics "Hot Spots" Information and Assessment Act of 1987* (AB 2588 and CH&SC, Sections 44300 through 44384). The Act regulates more than 700 air toxics, including all designated TACs. Under AB 2588, industrial and municipal facilities emitting more than 10 tons per year of any criteria air pollutant must estimate and report their TAC emissions to local air districts. The local air districts then prioritize facilities as high, medium, or low priority. This designation is used to determine the specific requirements needed to comply with AB 2588. High-priority facilities are required to submit a human health risk assessment. If the predicted health risks are great enough, the facility must communicate the results to the public and implement a risk reduction program. Medium- and low-priority facilities are merely required to pay fees and provide updates to their emission inventories every 4 years or sooner if major changes affecting TACs are undertaken.

At Edwards AFB, TACs or HAPs are generated because of various processes, including aircraft cleaning and painting, lubricating processes, fuel combustion (e.g., Tactical Support Equipment (TSE), boilers, turbine engines), adhesive/sealant applications, jet engine testing and organic liquid storage and transfer.

In 1994, based on the basewide TAC emission inventory, the KCAPCD rated Edwards AFB as a medium-priority facility. No further action has been required other than a periodic inventory update.

3.3 Water Resources

Water Resources describes the quality, quantity, sources, and use of water at Edwards AFB. This includes drinking (potable) water, wastewater, and stormwater. The sources of water on Edwards AFB include groundwater, Antelope Valley-East Kern (AVEK) Water Agency water, treated wastewater (irrigation), and stormwater.

Edwards AFB has various facilities dedicated to water resources. They include six chlorination points for drinking (potable) water, numerous potable and nonpotable water storage tanks, two operating wastewater treatment plants (Main Base and the AFRL with associated evaporation ponds), and stormwater retention ponds.

3.3.1 Regulatory Requirements/Guidance

The *Clean Water Act* (CWA) (33 U.S.C. 1251 et seq.), as amended, is designed to restore and maintain the chemical, physical, and biological integrity of surface waters. The CWA establishes effluent standards on an industry basis and addresses water pollution issues through a permitting system designed to control, and eventually eliminate, water pollution. Violations of the CWA can result in large fines and/or imprisonment.

Air Force Instruction 32-7041, *Water Quality Compliance*, provides details of the Air Force Water Quality Compliance Program. It applies to generating, collecting, treating, reusing, and

disposing of domestic and industrial wastewater, stormwater, nonpoint-source runoff, sewage sludge, and water treatment residuals. It also explains how to assess, attain, and sustain compliance with the CWA; other federal, state, and local environmental regulations; and related Department of Defense (DOD) and Air Force Directives.

Air Force Instruction 32-1066, *Plumbing Systems*, implements Air Force Policy Directive (AFPD) 32-10, *Installations and Facilities*, by providing guidance for personnel maintaining and operating plumbing systems on Air Force installations. It adopts the International Association of Plumbing and Mechanical Officials 1997 *Uniform Plumbing Code* (UPC)

Air Force Flight Test Center Instruction 32-6, *Edwards AFB Wastewater Instruction*, establishes base policy; assigns responsibility for wastewater system oversight and operation; and for accomplishing, monitoring, and reporting requirements of the CWA and associated directives. It applies to domestic and nondomestic wastewater treatment and pretreatment systems, including, but not limited to, collection systems, trucked wastewater, lift station, septic tanks, stormwater treatment, industrial wastewater treatment, oil/water separators (OWS), grease traps, leachate, and groundwater treatment facilities. It applies to all dischargers and emphasizes eliminating, reducing, and controlling nondomestic wastewater. Environmental Management establishes and publishes technical policy and guidance through this instruction to base organizations for collection, treatment, storage, and disposal of domestic and industrial wastes. Environmental Management establishes restrictions on what can be discharged and at what volumes and concentrations will be permitted.

Air Force Flight Test Center Instruction 32-17, *Potable Water Supply*, outlines the responsibilities and procedures to control the use of potable water that will allow adequate storage capacities for firefighting protection. It is designed to establish an effective conservation management program. This instruction executes four condition categories depending on the relationship between water production capabilities and water demand.

Construction activities should adhere to the terms and conditions of the *Stormwater Pollution Prevention Plan (SWPPP)*, *Edwards Air Force Base, California* (AFFTC 1998b). The SWPPP identifies and assesses sources of stormwater pollution and develops practices and controls to reduce the amount of pollutants in stormwater discharges.

All conditions and requirements of the California Water Resources Control Board (CWRCB) Board Order 6-01-41, *Revised Waste Discharge Requirements for U.S. Department of the Air Force, Edwards Air Force Base – Main Base Wastewater Treatment Plant*, shall be met prior to disposal of nonhazardous wastewater to the Wastewater Treatment Plant (WWTP).

3.3.2 Water Quality and Source

Edwards AFB has been subdivided into six Stormwater Management Units (SMUs): Main Base flightline, Main Base miscellaneous, South Base, National Aeronautics and Space Administration (NASA), AFRL, and North Base. These units are defined as nonphysical in that the boundaries reflect tenant lease areas and other organizational areas. In addition to the stormwater management units, eight stormwater drainage areas have also been delineated in the Edwards AFB SWPPP. These Stormwater Drainage Areas (SWDAs) include the Main Base

Flightline South, Main Base Flightline Central, NASA/Main Base Flightline North, South Base, North Base, Piute Ponds, Small Arms Range, and the Main Base Outlying Region. These SWDAs are delineated with respect to topographical features. The SWPPP describes each drainage area in detail, including watershed association, area covered, containment structures and areas, and facility association (AFFTC 1998b). Proposed project activities would be located within the Main Base Flightline SMU.

The Main Base Flightline SMU covers approximately 5 square miles. Most of the area is developed due to the many runways, taxiways, parking areas, and buildings associated with the various aircraft testing programs on the flightline. Approximately 80 percent of this SMU is impervious.

The NASA/Main Base Flightline North SWDA is part of both the Muroc Junction and the Mojave-Soledad Mountain Drainage Areas, subwatersheds of the Antelope Valley Basin. The NASA/Main Base Flightline North SWDA covers approximately 1,485 acres. Stormwater drainage in this area is recovered by catch basins and retention ponds located adjacent to Rogers Dry Lake. At the NASA complex, a pair of retention ponds, located adjacent to Rogers Dry Lake collect most stormwater runoff. The remaining runoff travels overland to a second location just north of Building 1850. Some stormwater runoff from Main Base also reaches this second location. Ultimately, the runoff from these two sources combine as the second location discharges into Rogers Dry Lake at a point approximately 800 feet east of Building 4809. With the exception of a small area around Building 3800, stormwater runoff in the Main Base Flightline North SWDA is diverted to a catch basin just north of the General Electric Company jet engines test cell. Building 3800 drainage is conveyed via a 10-inch storm sewer to a point 60 feet south of Pad 19 where it discharges to a catch basin. Major industrial activities in this drainage area include aircraft maintenance and repair, as well as aircraft testing programs. The operations at these facilities have the potential to contribute pollutants into stormwater discharge.

The Main Base Flightline Central SWDA is part of the Mojave-Soledad Mountain Drainage Area, a subwatershed of the Antelope Valley Basin. The Main Base Flightline Center SWDA covers approximately 745 acres. Stormwater drainage is collected by a system of storm sewers that discharge at a centralized point approximately 1,050 feet northeast of Building 1930. Aircraft and motor vehicle maintenance and repair are the main industrial activities in this area. The operations at these facilities have the potential to contribute pollutants into stormwater discharge.

The Main Base Flightline South SWDA is part of the Mojave-Soledad Mountain Drainage Area, a subwatershed of the Antelope Valley Basin. The Main Base Flightline South SWDA covers approximately 628 acres. An evaporation pond, approximately 3,000 feet northeast of Building 1600 collects stormwater in this SWDA. Aircraft maintenance and repair comprises the largest portion of industrial activities in this area. The operations at these facilities have the potential to contribute pollutants into stormwater discharge.

The Edwards AFB SWPPP identifies and assesses sources of stormwater pollution and develops practices and controls to reduce the amount of pollutants in stormwater discharges. The SWPPP helps identify the sources of pollution that affect the quality of industrial stormwater and authorized nonstormwater discharges, and ensures the implementation of the best

management practices (BMPs) to reduce or prevent pollutants in industrial stormwater discharges and authorized nonstormwater discharges.

3.4 Safety and Occupational Health

Safety and occupational health is defined as the protection of workers and the public from hazards. The total accident spectrum encompasses not only injury to personnel, but also damage or destruction of property or products. For worker safety, the boundary of the immediate work area defines the region of influence.

3.4.1 Regulatory Requirements/Guidance

The OSHA developed standards to promote a safe working environment. These standards establish general environmental controls, including personal protective equipment, wherever necessary because of hazards, processes, or the environment. Exposure limits for noise, ionizing and nonionizing radiation, and toxic and hazardous substances have been established, as well as requirements for handling and storing compressed gases and flammable liquids. The OSHA Act also provides standards for emergency response to related hazardous chemical and hazardous wastes.

Federal OSHA requirements and AFIs are the applicable regulatory requirements. California OSHA regulations do not apply to Edwards AFB DOD workers (e. g., military and civilian). Independent contractors are responsible for meeting Cal-OSHA requirements.

Statutory and regulatory requirements of the federal OSHA and the Air Force Occupational Safety and Health (AFOSH) Standards, which apply to the safety of workers on Edwards AFB, are enforced locally by Bioenvironmental Engineering, Ground Safety, and the base Fire Department. In addition, operational safety is supervised by various offices for specific activities.

The OSHA General Duty Clause, Section 5(a)1, states that employers will provide a workplace free of recognized hazards that cause or are likely to cause death or serious physical harm.

Title 29 CFR 1910.95, *Occupational Noise Exposure*, states that protection against the effects of noise exposure shall be provided when the sound levels exceed those shown in this regulation.

3.4.2 Exposure Hazards

Hazardous noise exposure occurs when workers are present in areas where ambient noise levels exceed 85 dB. To prevent potentially harmful effects to Air Force and civilian personnel from exposure to hazardous noise, the Air Force established a hazardous noise program under AFOSH Standard 48-19, *Hazardous Noise Program*. Under this program, Bioenvironmental Engineering is responsible for accomplishing hazardous noise surveillance to determine if military or DOD civilian personnel working in areas where hazardous noise exposure may occur require engineering and administrative controls, personal protection, or if potential hazardous noise areas require signage. Non-DOD civilian personnel working on the installation are exempt from AFOSH Standard 48-19, but must comply with applicable federal and state regulations.

Hazardous noise areas exist in the Main Base flightline area. As such, workers are required to implement hearing protection measures. In addition, signs are posted to alert workers who are present in these hazardous noise areas.

3.5 Hazardous Materials and Waste

A hazardous material is any material whose physical, chemical, or biological characteristic, quantity, or concentration may cause or contribute to adverse effects in organisms or their offspring; pose a substantial present or future danger to the environment; or result in damage to or loss of equipment, property, or personnel.

Hazardous wastes are those substances that have been “abandoned, recycled, or are inherently waste-like” and (because of their quantity, concentration, or characteristics) have the potential to cause an increase in mortality or serious irreversible illness, or pose a substantial hazard to human health and/or the environment if improperly treated, stored, transported, and/or discarded.

For purposes of this analysis, hazardous material and hazardous waste are those substances that are regulated by the *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA), 42 U.S.C. 9601, and *Resource Conservation and Recovery Act* (RCRA), 42 U.S.C. 6901–6991, respectively.

Solid waste refers to nonhazardous garbage, refuse, and any other discarded solid material resulting from residential, commercial, and industrial activities or operations. Solid waste can be classified as construction/demolition, nonhazardous recyclables, or nonhazardous nonrecyclable waste.

3.5.1 Regulatory Requirements/Guidance

The RCRA is administered by the U.S. EPA. The act regulates the handling, transport, storage, treatment, and disposal of solid and hazardous waste. It places responsibility for hazardous waste on the facilities generating the waste and requires them to meet various standards regarding personnel training, facility inspections, waste identification and analysis, emergency response planning, and recordkeeping.

The CERCLA provides broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. The act authorizes short-term removal actions and long-term remedial response action. The act establishes prohibitions and requirements for closed and abandoned hazardous waste sites, provides for liability of persons responsible for release of hazardous waste at these sites, and establishes a trust fund to provide for cleanup when no responsible party can be identified.

Air Force Instruction 32-7042, *Solid and Hazardous Waste Compliance*, implements AFRD 32-70, *Environmental Quality*. The instruction identifies compliance requirements for all solid and hazardous waste, except radioactive waste.⁴ In the United States and its territories, this guidance is intended to be used with applicable federal, state, and local standards for solid and

⁴The applicable solid waste regulations are in Subtitle D of Title 40, CFR, Parts 240 to 244, 257, and 258; for hazardous waste, the applicable regulations are in Subtitle C, 40 CFR 260–272.

hazardous waste. Specifically, it contains requirements for solid and hazardous waste characterization, training, accumulation, turn-in and disposal, as well as procedures for managing disposal contracts, inspections, permits, and recordkeeping.

Air Force Flight Test Center Instruction 32-7086, *Hazardous Materials Management*, establishes procedures and standards that govern the management of hazardous materials throughout the Air Force. The instruction applies to all Air Force personnel who procure, use, or dispose of hazardous materials.

Air Force Flight Test Center Instruction 32-19, *Hazardous Material Management Process*, ensures the AFFTC remains in compliance with all applicable federal, state, local, and Air Force regulations and laws regarding hazardous materials management. The instruction involves the use of information systems and positive control of hazardous material to minimize waste disposal. The hazardous material processes would be reviewed by the workplace supervisor, Environmental Management, Ground Safety, and Bioenvironmental Engineering to ensure the least occupationally and environmentally hazardous materials are used. All hazardous material transactions would occur using the most current automated data system fielded for use at Edwards AFB.

The *Edwards Air Force Base Hazardous Waste Management Plan Number 32-7042* (HWMP) (AFFTC 1999a) supports Air Force directives and is intended to ensure compliance with applicable federal, state, and local regulations. The objective of the HWMP is to provide sufficient administrative direction and instructions for originators of RCRA and non-RCRA wastes to properly characterize, package, label, store, treat, handle, and transport hazardous waste at Edwards AFB. The goals are to ensure compliance with the applicable federal, state, and local hazardous waste regulations; simplify administrative procedures; and reduce pollution and environmental impacts through improved waste management practices.

The *Edwards Air Force Base Solid Waste Management Plan* (AFFTC 1999b) describes Environmental Management's functional management of municipal solid waste disposal and recycling on Edwards AFB. The purpose of the plan is to comply with federal, state, and local regulations and Air Force policy and guidance on the management of nonhazardous municipal solid waste.

The federal *Emergency Planning and Community Right-to-Know Act of 1986* (EPCRA) (42 U.S.C. 11001–11050) has specific reporting requirements that must be followed in the event of a release to the environment of hazardous or extremely hazardous substances, as designated under CERCLA. An inventory of hazardous substances released or used in excess of specified threshold quantities must be submitted annually to the responsible state agency (i.e., Certified Unified Program Agency [CUPA] and State Emergency Planning and Response Commission [SEPRC]). An inventory of accidental toxic releases in excess of specified threshold quantities must be reported directly to the California Environmental Protection Agency (Cal/EPA). Under EPCRA, specific storage requirements would also apply to handlers of hazardous materials.

The *Pollution Prevention Act of 1990* (PPA) (42 U.S.C. 13101–13109) established a national policy for pollution prevention through source reduction and recycling. The PPA calls for the establishment of a nationwide source reduction program and a strategy for quantifying source

reduction efforts. The Air Force has incorporated this national policy into operations and acquisition programs, as directed in AFI 32-7080, *Pollution Prevention Program*, which requires application of the following PPA-prioritized hierarchy of pollution prevention approaches:

- a. Prevent or reduce pollution at the source whenever feasible;
- b. Recycle pollution in an environmentally acceptable manner that cannot feasibly be prevented;
- c. Treat pollution that cannot feasibly be prevented or recycled; and
- d. Dispose of pollution into the environment only as a last resort.

3.5.2 Hazardous Materials

The types of hazardous materials most commonly used during construction projects include acids, corrosives, caustics, glycols, compressed gases, paints and paint thinners, solvents, sealants, adhesives, cements, caulking, fire retardant, and hot asphalt (140 degrees Fahrenheit or greater).

Prior to bringing any new hazardous material on base, contractors are required to provide a copy of the relevant material safety data sheet (MSDS) to Bioenvironmental Engineering, who maintain a master hazardous material inventory list for Edwards AFB with all listed MSDSs.⁵ All organizations and contractors are required to maintain strict inventories of all hazardous materials. Furthermore, organizations are also required to reduce the quantity of hazardous materials used or replace them with nonhazardous material, if possible, as part of the Pollution Prevention Program. Guidelines used by Edwards AFB include AFI 32-7086, *Hazardous Materials Management*; AFI 32-7042, *Solid and Hazardous Waste Compliance*; and AFFTCI 23-1, *Hazardous Material Management Program*.

In response to AFI 32-7080, the AFFTC has prepared the *Edwards Air Force Base Pollution Prevention Plan* (AFFTC 1995c). This plan contains eight program elements, six of which are required under AFI 32-7080. These elements include: ozone depleting substances, EPA-17 industrial toxic project chemicals, hazardous waste minimizations, municipal solid waste minimizations, affirmative procurements, energy conservation, VOC air emission reductions, and Toxic Release Inventory (TRI). Toxic Release Inventory is required under EO 12856, *Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements*, which requires federal agencies to comply with the amended PPA and the EPCRA.

The AFFTC uses Pollution Prevention Opportunity Assessments (PPOAs) in order to identify existing processes used, hazardous chemicals required for those processes, and recommended actions needed to eliminate and/or reduce pollution. The Pollution Prevention Plan (AFFTC 1995c) acknowledges Air Force requirements for the use of specific hazardous materials that would otherwise be targeted for reduction/elimination.

⁵Occupational Safety and Health Administration regulations (29 CFR 1910.1200) require MSDSs for all hazardous chemicals used on base. The MSDS identifies a chemical's identity, its physical and health hazard information, safe handling and use procedures (including exposure control measures), and product use warnings. Air Force Occupational Safety and Health Standard 48-21, *Air Force Hazard Communication Program*, reestablishes the minimum requirements for an effective hazard communication program for personnel who use or produce hazardous chemicals.

3.5.3 Hazardous Waste

The use of hazardous materials results in the generation of hazardous waste (e.g., paint waste, used oil, and contaminated rags) that requires proper handling and disposal. The U.S. EPA enforces RCRA, which provides guidelines for the generation, storage, transportation, and disposal of hazardous waste. The Cal/EPA enforces hazardous waste laws as stated in 22 CCR Chapters 10 through 20 and the California State Health and Safety Code (Section 25100), *Hazardous Waste Control*. Environmental Management administers all hazardous waste accumulation at Edwards AFB. Guidelines used by Edwards AFB include the HWMP (AFFTC 1999a), which was prepared in accordance with AFI 32-7042, *Solid and Hazardous Waste Compliance*. The plan establishes procedures to achieve compliance with Applicable or Relevant and Appropriate Requirements (ARARs) for hazardous waste management, except munitions, explosives, biohazards, and radioactive waste.⁶ The plan contains requirements for solid and hazardous waste characterization, training, accumulation, turn-in and disposal, as well as procedures for inspections, permits, and recordkeeping.

The storage of hazardous waste begins at the point of generation. An initial accumulation point (IAP) is an area at or near the point of hazardous waste generation; where hazardous wastes may be accumulated until they are sent to either an accumulation site (ACCS) (known more commonly as a 90-day accumulation point [AP]) or the Hazardous Waste Support Facility (HWSF) (a facility permitted to store hazardous wastes up to 1 year). Any new IAP and its proposed location must be approved by and coordinated with Environmental Management in order to minimize the threat to human health and the environment. An IAP has fewer operational requirements than an ACCS, provided the following restrictions in *Access to Communications or Alarm System* (22 CCR 66264.34) are met:

- a. Hazardous waste accumulation/containerization is accomplished only by knowledgeable and trained IAP personnel under controlled circumstances (waste addition logs are used to identify what hazardous waste is added to a container);
- b. Hazardous waste accumulation is not more than 55 gallons per wastestream of hazardous waste or 1 quart of acutely or extremely hazardous waste; and
- c. Hazardous waste may be accumulated for 270 days or until either of the previously listed restrictions are exceeded.

An IAP must also comply with other operational requirements that ensure wastes are managed in accordance with applicable regulations and as specified in the HWMP.

An ACCS either receives hazardous waste generated at an IAP or is used to accumulate wastestreams in lieu of using an IAP (i.e., when either the volume or accumulation time restrictions applicable to an IAP cannot be met). In either case, wastes accumulated at an ACCS are subsequently sent to the HWSF. Like an IAP, any new ACCS and its proposed location must be approved by, and coordinated with Environmental Management in order to minimize the threat to human health and the environment. Unlike an IAP, hazardous waste may only be stored at an ACCS for up to 90 days. In addition, the ACCS has more rigorous operational

⁶The applicable hazardous waste regulations are in Subtitle C, 40 CFR 260–272.

requirements that must be followed in order to ensure that wastes are managed in accordance with applicable regulations and as specified in the HWMP.

The HWSF at Edwards AFB is the final stage for on-base management of hazardous waste. The HWSF is managed by Environmental Management under a service contract and operates as a hazardous waste storage facility in Building 4916. This facility is permitted to temporarily store (for up to 1 year) hazardous waste in accordance with 22 CCR 66270 under a Part B Permit. Wastes accumulated at IAPs and ACCSs throughout the base are transported to the HWSF prior to shipment off base for treatment, storage, or disposal. Federal standards require shipments of hazardous waste to be labeled, marked, and placarded in accordance with United States Department of Transportation (DOT) regulation 49 CFR, *Transportation*, Chapter I, Subchapters B and C.

The transportation of Environmental Management waste is governed by DOT regulations that specify procedures for transporting these materials on public highways, (49 CFR, 100–199; 40 CFR, 260–299; and 22, CCR, Division 4.5, Chapter 13). However, these state and federal DOT regulations do not apply to the transport of hazardous materials and/or hazardous wastes between points on base.

3.5.4 Solid Waste

Edwards AFB operates a nonhazardous (municipal solid waste) landfill within the Main Base area and has an established procedure for staging and processing inert debris and disposing of construction and demolition debris. Civil Engineering will specify the area where the inert debris should be stockpiled. If this location is not approved at the time of project activities, construction and demolition waste (CDW) disposal would then be required at an approved state-licensed landfill.

The base actively participates in a recycling program. A contractor operates the program under contract with Edwards AFB with program oversight provided by Environmental Management. Some waste generated from the proposed action could be recycled (e.g., concrete, asphalt, paving, and metals).

3.6 Biological Resources

Naturally occurring organisms, the physical and biological aspects of their environment, and the relationships between them make up biological resources. Biological resources include native and introduced plants that comprise various vegetative habitats, the animals that are found in such habitats, and the physical areas that support plant and wildlife populations.

Edwards AFB contains and manages biological resources that are typical of a desert environment. These include animal and plant species (including the associated habitats of each), floodplains, and watersheds.

3.6.1 Regulatory Requirements/Guidance

The *Endangered Species Act of 1973* (16 U.S.C. 1531–1544) provides a framework for the protection of endangered and threatened species. Federal agencies may not jeopardize the

existence of listed species, which includes ensuring that actions they authorize, fund, or carry out do not adversely affect the species or adversely modify designated critical habitats. Under the ESA, all federal departments and agencies must utilize their authorities, as appropriate, to promote the recovery of listed species. In addition, the ESA prohibits all persons, including federal agencies, from harming or killing (taking) individuals of a listed species without authorization. While federal agencies must consult with the United States Fish and Wildlife Service (USFWS) or National Marine Fisheries Service when their activities may affect listed species, projects cannot be stopped unilaterally by the Services; however, for any anticipated take to be authorized, applicable measures to minimize the take, as outlined in the consultation, must be followed.

The *Migratory Bird Treaty Act* (MBTA) of 1918 (16 U.S.C. 703–712), as amended, provides for federal protection of all migratory bird species and their active nests or eggs. Permits are required to remove these birds and their nests, from their roosting and nesting areas.

The *Sikes Act* (16 U.S.C. 670a-670o), as amended, provides for cooperation between the Departments of the Interior and Defense and state agencies in planning, developing, and maintaining fish and wildlife resources on military reservations throughout the United States.

The *California Endangered Species Act* (CESA) (California Fish and Game Code Section 2050 et seq.) generally parallels the main provisions of the federal ESA and is administered by the California Department of Fish and Game (CDFG). Under the CESA, the term “endangered species” is defined as a species of plant, fish, or wildlife that is in serious danger of becoming extinct throughout all, or a significant portion of its range, and is limited to species native to California. The CESA establishes a petitioning process for the listing of state-threatened or endangered species, and the CDFG is required to adopt regulations for this process. The CESA prohibits the taking of state-listed species except as otherwise provided in state law. Unlike the federal ESA, the CESA applies prohibitions to species petitioned for state listing (e.g., state candidates).

The *Animal Damage Control Act* (ADCA) (7 U.S.C. 426–426b), as amended, is administered by the Secretary of Agriculture and provides broad authority for investigation and control of mammalian predators, rodents, and birds.

Department of Defense Directive (DODD) 4700.4, *Natural Resources Management Program*, prescribes policies and procedures for an integrated management program of natural resources on DOD property. Enforcement of laws primarily aimed at protecting natural resources and recreation activities that depend on natural resources is an integral part of a natural resources program and shall be coordinated with, or under the direction of, the natural resources manager for the affected area.

Air Force Instruction 32-7064, *Integrated Natural Resources Management*, implements AFPD 32-70, *Environmental Quality*, and Department of Defense Instruction (DODI) 4715.3, *Environmental Conservation Program*. Air Force Instruction 32-7064 explains how to manage natural resources on Air Force property in compliance with federal, state, and local standards. The Integrated Natural Resources Management Plan (INRMP) is a key tool for managing the installation’s natural resources.

3.6.2 Animal Species

While there are several species of interest at Edwards AFB, there is only one listed species with legally required mandates on management practices, the desert tortoise (*Gopherus agassizii*). The desert tortoise is federally listed as threatened under the ESA and state listed as threatened by the California Fish and Game Commission. The desert tortoise is an herbivorous reptile whose native range includes the Sonoran and Mojave deserts of southern California, southern Nevada, Arizona, extreme southwest Utah, and Sonora and northern Sinaloa, Mexico. Desert tortoises are known to occur at Edwards AFB (AFFTC 1996); however, due to the proximity to the lakebed and flightline and the lack of habitat indicators, local desert tortoise populations are not threatened by this project.

The proposed project activities are covered by the *Biological Opinion for Routine Operations and Facility Construction within the Cantonment Area of Main and South Bases, Edwards Air Force Base, California* (1-6-91-F-28) (USFWS 1995) with respect to protection of the desert tortoise and its habitat.

The *Biological Opinion for the Development and Operation of Eight Borrow Pits Throughout the Air Force Flight Test Center in Kern, Los Angeles, and San Bernardino Counties, California* (1-8-96-F-56) (USFWS 1997) addresses the use of Borrow Sites A, B(16), C, 1, 5, 21, 23, and 28 with respect to protection of the desert tortoise and their habitat.

The burrowing owl (*Tyto alba*) is currently a federal and California species of concern and is also protected under the auspices of the MBTA. It is a small, ground-dwelling bird with a round head that lacks the tufts of feathers, which are often referred to as ear tufts. It has white eyebrows, yellow eyes, and long stilt-like legs. Burrowing owls are found in open, dry grasslands, agricultural and range lands, and various desert habitats (Haug, E.A. and L.W. Oliphant 1990). On Edwards AFB, burrowing owls are known to inhabit man-made cover features such as irrigation pipes and culverts along graded road shoulders, as well as natural cover features such as animal burrows or dens (e.g., desert tortoise, desert kit fox, or badger). No burrowing owls or signs of burrowing owls were observed in the project area.

Common animal species found in the project area include black-tailed jackrabbit (*Lepus californicus*), desert cottontail (*Sylvilagus audubonii*), deer mouse (*Peromyscus maniculatus*), pocket mouse (*Perognathus* sp.), kangaroo rat (*Dipodomys* sp.) and Antelope ground squirrel (*Ammospermophilus leucurus*). For a list of common animals found at Edwards AFB, see the *Biological Resources Environmental Planning and Technical Report Basewide Vegetation and Wildlife Surveys and Habitat Quality Analysis* (Mitchell et al. 1993).

3.6.3 Plant Species

The proposed project is located in a xerophytic phase salt bush (*Atriplex* sp.) scrub plant community. Common plant species found in the project area include: spotted milk vetch (*Astragalus lentiginous*), alkali rubber rabbit-brush (*Chrysothamnus nauseosus* spp. *Mohavensis*), creosote bush (*Larrea tridentata*), split grass (*Schismus barbatus*), and a sage species (*Artemisia* sp.). No sensitive plant species are known to occur within the proposed project area.

3.7 Geology and Soils

Geologic resources consist of naturally formed minerals, rocks, and unconsolidated sediments. Soil refers to the uppermost layers of surficial geologic deposits and is developed by the weathering of those deposits. Concerns associated with the geologic setting at Edwards AFB, which could either affect or be affected by the proposed project, include topography, ERP site disturbance, seismicity, and land subsidence.

3.7.1 Regulatory Requirements/Guidance

The CERCLA (42 U.S.C. 9601) was enacted by Congress on 11 December 1980. This act provides broad federal authority to respond directly to releases or threatened release of hazardous substances that may endanger public health or the environment. The act authorizes short-term removal actions and long-term remedial response actions. The act establishes prohibitions and requirements concerning closed and abandoned hazardous waste sites; provides for liability of persons responsible for releases of hazardous waste at these sites; and establishes a trust fund to provide for cleanup on non-DOD property when no responsible party can be identified.

The RCRA (42 U.S.C. 6901–6991) was enacted into law in 1976 and is administered by the U.S. EPA. It regulates the handling, transport, storage, treatment, and disposal of solid and hazardous waste. It places responsibility for hazardous waste on facilities generating the waste and requires them to meet the various standards regarding personnel training, facility inspections, waste identification and analysis, emergency response planning, and record keeping.

In September 1990, the Air Force along with the U.S. EPA, Region IX; the California Department of Health Services (now referred to as the Cal/EPA, Department of Toxic Substances Control [DTSC] and the California Regional Water Quality Control Board [RWQCB], Lahontan Region), signed a Federal Facility Agreement (FFA). The FFA requires compliance with the *National Oil and Hazardous Substances Pollution Contingency Plan* (40 CFR 300), CERCLA, RCRA, and applicable state laws. Under Section 6.2 of the FFA, the Air Force agreed to undertake, seek adequate funding for, fully implement, and report on the following tasks: remedial investigation of sites; federal and state Natural Resource Trustee Notification and Coordination for the sites; feasibility studies for all sites; all response actions for the sites; and operation and maintenance of response actions at the site.

The purpose of the *Alquist-Priolo Earthquake Fault Zoning Act* (California Public Resources Code, Division 2, Chapter 7.5, and Section 2621, et seq.) is to provide for the adoption and administration of zoning laws, ordinances, rules, and regulations by cities and counties in implementation of the general plan that is in effect in any city or county. The Legislature declares that this act is intended to provide policies and criteria to assist cities, counties, and state agencies in the exercise of their responsibility to prohibit the location of developments and structures for human occupancy across the trace of active faults. Further, it is the intent of this act to provide the citizens of the state with increased safety and to minimize the loss of life during and immediately following earthquakes by facilitating seismic retrofitting to strengthen buildings, including historical buildings, against ground shaking.

3.7.2 Topography

The United States Department of Agriculture (USDA), Natural Resource Conservation Service (NRCS), has completed a soil survey of Edwards AFB for the United States Army Corps of Engineers (USACE). The *Grazing and Cropland Management Plan for Edwards Air Force Base, California* (USACE 1997) describes results of the soil survey that was conducted by the USDA. Based on this survey, the soils at Edwards AFB can be characterized as predominantly alkaline, consisting of loams, sandy loams, and loamy sands, all of which are susceptible to wind and water erosion. According to the *Interim Soil Survey of Edwards Air Force Base, California*, (USDA Soil Conservation Service [SCS] 1998), the soil at Edwards AFB is given erosion hazard ratings of slight-to-severe for wind erosion and slight-to-moderate for water erosion.

The surface of the flightline is dominated by the alluvial sediments, that are sandy loam in texture. The flightline is located near the edge of the playa/lakebed. Main Base is located in the playa boundary zone where the granitic bedrock outcrops to the west and underlies the extensive playa deposits of Rogers Dry Lake on the east. The lacustrine and alluvial deposits overlying bedrock in the Main Base area vary considerably both laterally and vertically. Depth to bedrock can range from surface outcroppings to more than 80 feet in the playa deposits on the eastern edge of the Main Base area. The north end of Rogers Dry Lake has relatively shallow depth to bedrock.

3.7.3 Environmental Restoration Program Remediation Disturbance

Soil and groundwater are susceptible to contamination. Releases of hazardous chemicals, such as petroleum products and solvents, have created soil and groundwater contamination at military installations. Contaminated soil and/or groundwater may require physical removal or extensive remediation to ensure the protection of public health and safety.

The ERP was established to identify, investigate, assess, and clean up hazardous waste at former disposal sites on the base in compliance with the CERCLA. Under the ERP, a preliminary assessment was conducted at Edwards AFB to locate potential areas of concern (AOCs) that may have resulted from past activities on the 301,000-acre base.

Remediation efforts usually involve extraction and/or monitoring wells that are drilled to groundwater, or deeper, and are located throughout the contaminated groundwater plume. Extraction wells can extract both groundwater and air from the unsaturated zone. They are connected by a series of underground or aboveground pipes that convey air, water, and compressed air (for pneumatic pumps located within the wells). The extracted material is then piped to a treatment compound where equipment is located to treat the incoming vapors and liquids. The treatment compound will have some connections for electricity, natural gas, and sewer hookups. Monitoring wells were installed to observe the condition of the groundwater within a specific location. Well locations are usually selected on the basis of known or expected hydrologic, geologic, and water quality conditions and the location of pollutant or contaminant sources. The Environmental Management Restoration Branch schedules and conducts remediation efforts for the ERP. Many of the systems are in construction or planning phases. Any project or activity planned in an ERP site undergoing, or scheduled for, remediation would be scheduled to avoid conflicts with ERP timelines and requirements. This process ensures that

equipment is not damaged and program efforts are not negatively affected by the proposed project or activity.

3.7.4 Seismicity

The geologic and structural development of the vicinity surrounding Edwards AFB has been measurably affected by tectonic activity. The Mojave Structural Block is wedged between two major intersecting shear zones: the northeast trending Garlock Fault, which controls the trend of the Tehachapi Mountains to the northwest of Edwards AFB, and the northwest trending San Andreas Fault system, which bounds the San Gabriel Mountains to the south. Both fault zones have had substantial activity in the Quaternary period. The San Andreas Fault zone is the more dominant of the two, with a known length of about 600 miles and right-lateral displacement of up to 350 miles. The Garlock Fault zone is traceable for more than 150 miles and has left-lateral displacement (Weston 1986).

Like much of southern California, Edwards AFB is subject to earthquake activity and associated seismic hazards. At least eight minor faults are known, or are suspected due to their trends, to be present within the boundaries of Edwards AFB; however, no fault has been active in the last 11,000 years. A local fault seismicity map shows the surface traces of these faults (Figure 9).

3.8 Socioeconomics

Socioeconomic resources are the economic, demographic, and social assets of a community. Key elements include fiscal growth, population, employment, housing, schools, and environmental justice.

For the purpose of this EA, the boundary of the socioeconomic environment is defined by those counties or portion of counties in which, the proposed action would occur. The economic impact region (EIR) includes all areas within this boundary. The EIR for an impacted community is fundamentally important to the analysis because it defines the area in which changes in fiscal growth, population, labor force and employment, housing stock and demand, and school enrollment would be assessed. The EIR for Edwards AFB is that area located within 75 miles of the Main Base, and includes portions of Los Angeles, Kern, and San Bernardino counties. However, a majority of potential socioeconomic impacts from base activities would be expected to occur within the Antelope Valley area (Figure 10).

3.8.1 Fiscal Growth

Edwards AFB makes a substantial contribution to the economic status of the surrounding communities within the Antelope Valley of California. For FY02, the estimated cumulative economic impact from Edwards AFB's annual operating expenditures including salaries, DOD acquisitions, and educational assistance in the surrounding communities was approximately \$1.2 billion.

3.9 Infrastructure

Infrastructure refers to the physical components that are used to deliver something (e.g., electricity or traffic) to the point of use. Elements of the base infrastructure system include

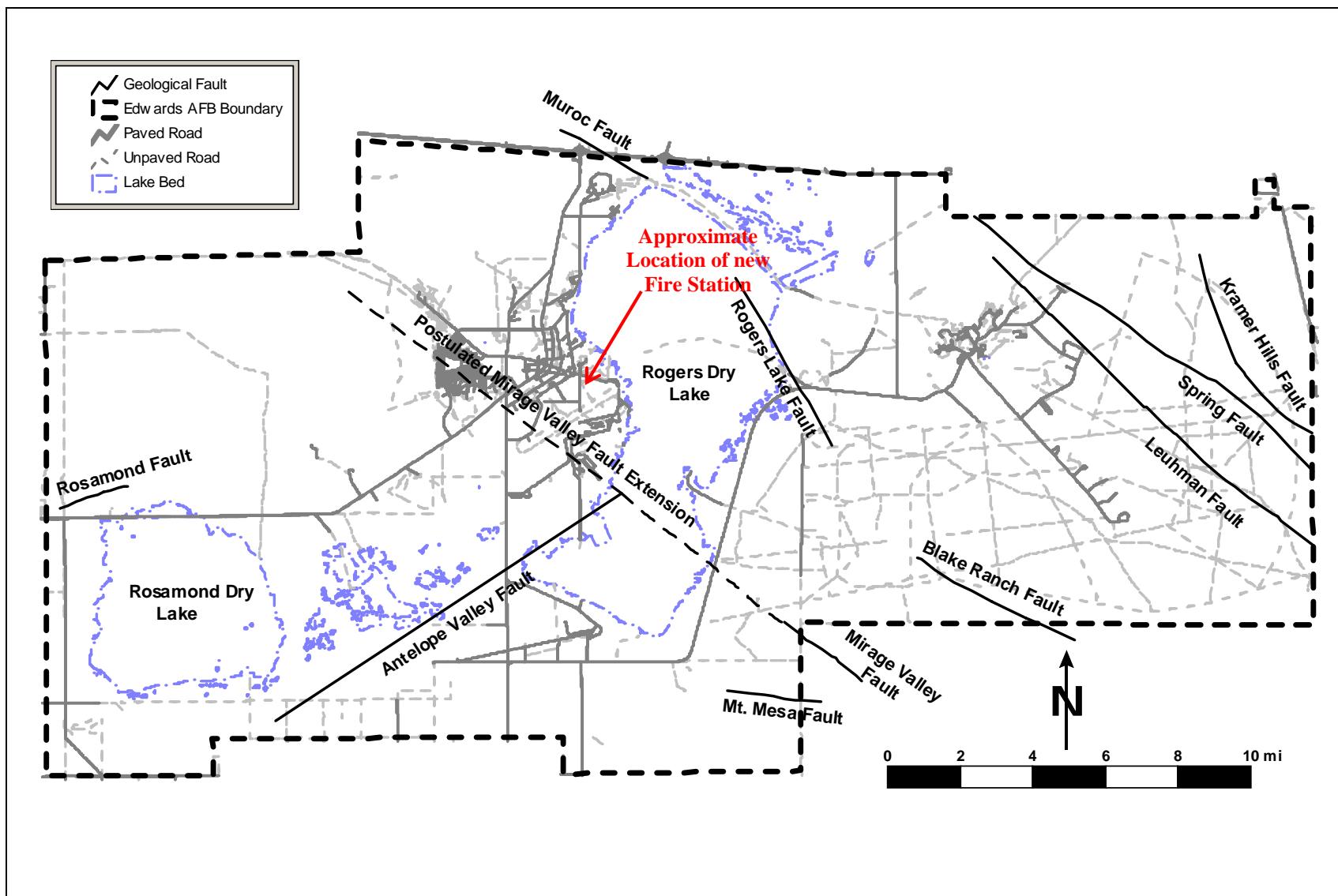


Figure 9. Local Faults Seismicity Map

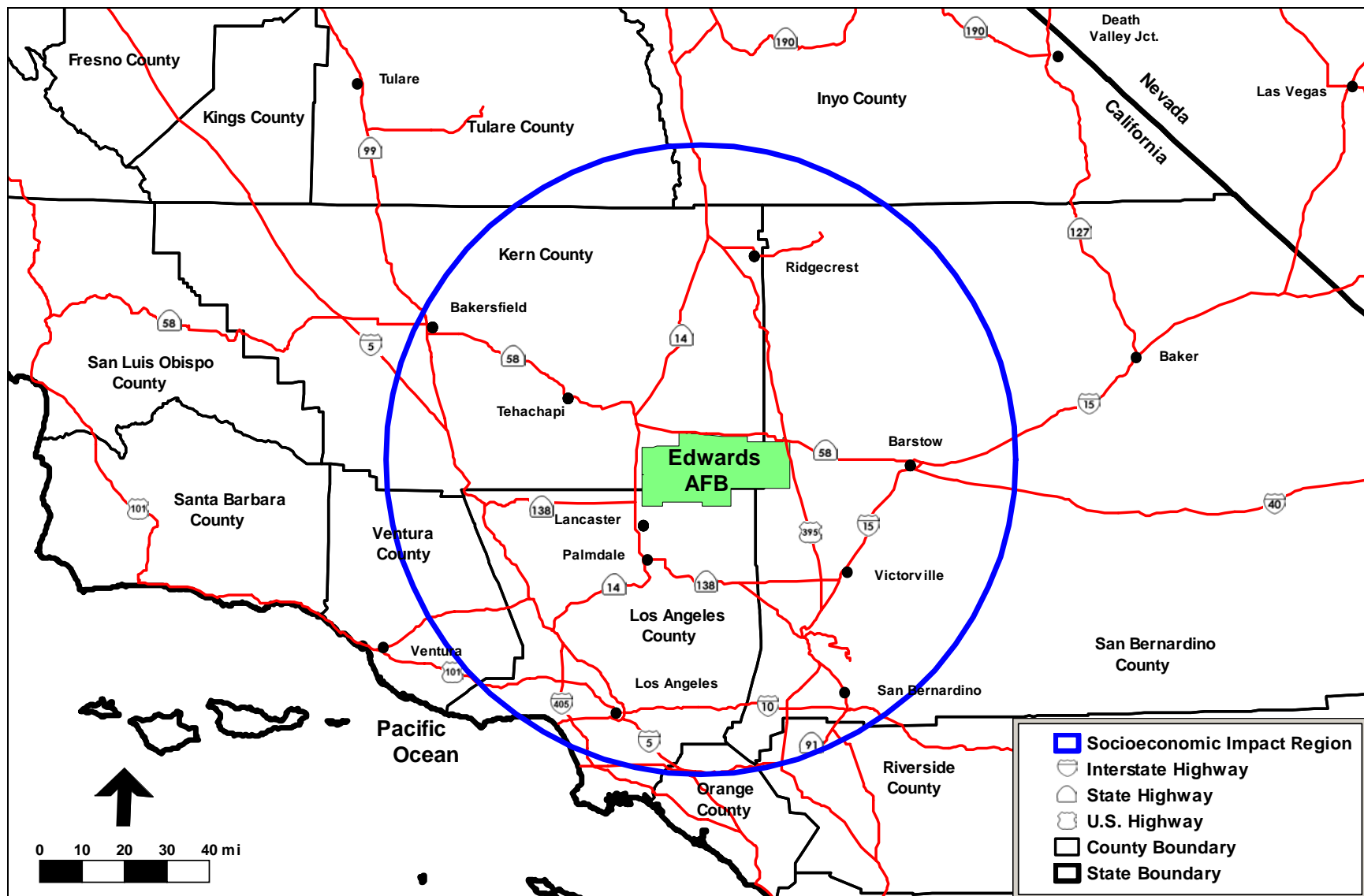


Figure 10. Socioeconomic Impact Region

water, wastewater, electricity, natural gas, communications lines (e.g., telephone or computer), and circulation systems (e.g., streets and railroads) that run in a network through the base.

3.9.1 Regulatory Requirements/Guidance

The *Uniform Plumbing Code* (UPC) establishes standards applicable to the erection, installation, alteration, repair, relocation, replacement, addition to, or maintenance of plumbing systems. These standards ensure protection of public health, safety, and welfare.

The International Conference of Building Officials 1997 *Uniform Building Code* (UBC) establishes minimum standards to safeguard life, health, property, and public welfare by regulating and controlling the design, construction, quality of materials, use and occupancy, location, and maintenance of all buildings and structures.

The NFPA *National Electrical Code* (NEC), NFPA 70, was first published in 1897 and is adopted and enforced in all 50 states. It provides practical safeguarding of persons and property from hazards arising from the use of electricity by establishing requirements for electrical wiring and equipment in virtually all buildings. It specifically covers the installation of electric conductors and equipment in public and private buildings, industrial substations, and other premises (e.g., parking lots); installation of fiber-optic cable, wiring, general electrical equipment, the use of electricity in specific occupancies and equipment; special conditions (e.g., emergency and standby power or conditions requiring more than 600 volts); and communication systems.

3.9.2 Transportation System

Edwards AFB is accessed by way of Rosamond Boulevard from the west or north, and by Lancaster Boulevard/120th Street East from the south. Primary access to Edwards AFB from the adjacent roadways is by way of three gates, each in operation 24 hours a day, 7 days a week. The gates are as follows: North, West, and South Gates. All are improved with two inbound and two outbound lanes at each gate facility (USACE and AFFTC 1994).

Internal circulation on base is by way of paved and unpaved primary, secondary, and tertiary roads. Primary roads connect Edwards AFB components such as the flightline, engineering and administration, and support areas to entry points. Secondary roads connect Edwards AFB components to one another and support facilities such as commercial or housing areas. Tertiary roads are unpaved access roads or residential streets within the housing area. Lancaster and Rosamond Boulevards are the two primary roads on Main Base. These two primary roads form the spine of the base road system, providing high-speed, high-volume access to connecting secondary and arterial roads and activity centers on Main Base. Significant secondary roads are Fitz-Gerald Boulevard, Forbes Avenue, Yeager Boulevard, and Wolfe Avenue.

In addition to the paved roadways, an extensive network of unimproved, dirt roadways exists, essentially equivalent to the paved network. These roads have posted speed limits and provide access to various installation facilities and sites. Traffic is comprised of government, contractor, and personally-owned vehicles (POVs) belonging to those that live and/or work on base. In addition, commercial and Air Force vehicles deliver materials to businesses and facilities and are used for service and construction work done in the area (e.g., repairs). Emergency vehicles require access to all buildings and roads.

3.9.3 Utilities

Existing utility lines run in a network in the project area. Utilities that may be encountered during digging and trenching operations at the project location could include water, electrical, communications, stormwater, and/or sanitary sewer systems. Water mains are typically transiteTM (i.e., asbestos cement) pipe. Utility service lines are galvanized steel or copper pipe. Sewer lines are vitrified clay pipes that run beyond 5 feet from the buildings and are cast iron within the 5-foot line and under building slabs.

3.10 Energy Resources

The use of energy resources at Edwards AFB includes, but is not limited to, natural and propane gas, fuel oil, electricity, and solar.

The general policy of the Air Force regarding energy is as follows: “Energy is essential to the Air Force’s capability to maintain peacetime training, readiness, and credible deterrence; to provide quality of life; and to perform and sustain wartime operations. In short, energy is an integral part of the weapon system...The most fundamental Air Force energy policy goal is to assure energy support to the national security mission of the Air Force in a manner which emphasizes efficiency of use, effectiveness of costs, and independence from foreign sources for mission-essential operations...” (AFFTC 1995b).

3.10.1 Regulatory Requirements/Guidance

The *Energy Policy Act of 1992* (PL 102-486) requires federal entities to identify and accomplish all energy and water conservation measures with payback periods of less than 10 years.

Executive Order 13123, *Greening of the Government through Efficient Energy Management*, identifies the Department of Energy (DOE) as the lead agency responsible for implementing the act and establishes seven goals regarding energy use that are applicable to federal agencies. These goals target reduction of:

- a. greenhouse gases;
- b. petroleum use;
- c. energy use by industrial, laboratory, and other facilities;
- d. total energy use (as measured at the source); and
- e. water consumption (and associated energy use).

The *Edwards Air Force Base Energy Plan* (AFFTC 1995b) serves as a component of the Base Comprehensive Plan and documents the policies, direction of development, and specific projects associated with the base’s desire to meet the national energy goals established by the *Energy Policy Act of 1992* (PL 102-486).

3.10.2 Energy Consumption

Edwards AFB uses electricity, natural gas/propane and other petroleum-based products (e.g., gasoline, jet fuel, and diesel) as sources of energy to operate facilities, vehicles, equipment, and aircraft. Consistent with federal law and Air Force policy, Edwards AFB has developed

various programs and methods to reduce energy use. These include awareness and educational programs (including standards for heating and cooling) and installation of energy management control systems (EMCSs) for cooling, heating, and lighting. Electric, gas, and water meters are being installed to heighten awareness of consumption. Other energy reduction projects at Edwards AFB include installation of swamp coolers, ceiling and wall insulation, double-pane windows, building foyers, and energy-efficient lighting tubes.

3.11 Public/Emergency Services

Public/emergency services refers to the capability for ensuring the protection of base personnel and property. The public/emergency service umbrella at Edwards AFB is comprised of the Fire Department, Security Forces, and the Medical Group.

3.11.1 Regulatory Requirements/Guidance

Department of Defense Instruction 6055.6, *DOD Fire and Emergency Services Program*, establishes parameters for the allocation, assignment, operation, and administration of DOD fire departments and related fire prevention functions, including emergency response. This instruction also establishes the DOD Fire and Emergency Services Quality Working Group; authorizes and monitors the publication of guides, handbooks, and manuals; and establishes the Department of Defense Fire Incident Reporting System (DFIRS).

3.11.2 Fire Protection/Prevention

Fire protection on base is comprised of personnel and equipment that are organized and trained to respond to a series of emergencies. The *DOD Fire and Emergency Services Program* (DODI 6055.6) provides guidance and prescribes uniform fire protection policies on military installations.

The Edwards AFB Fire Protection Program was established as a means to prevent fire and reduce loss from fire/hazardous material incidents to the environment, personnel, and military property. The program's mission is accomplished by promoting aggressive fire prevention tactics, maintaining a community outreach program, and an expert firefighting and rescue force to protect the base. The 95th Civil Engineer and Transportation Directorate, Fire Protection Division, is prepared to respond to emergencies (both on and off base) involving DOD facilities, structures, aircraft, equipment, hazardous materials, and natural/manmade disasters.

The emergency response time of the Fire Protection Division is contingent upon the distance to the emergency site and the availability of personnel, support equipment, and supplies. All areas of the base are currently covered. Given advance notice, additional areas can be accommodated. Table 10 shows the maximum allowable response times for the Fire Department on any military installation.

At Edwards AFB, the Fire Department's role during hazardous materials emergency response is to respond to the incident to provide command and control, rescue, and containment actions based on the conditions present. Once these actions are accomplished, the Fire Department's involvement reverts to a support role. Neutralization, recovery, cleanup, and disposition of hazardous waste are accomplished by trained experts in related fields and are not hazardous materials emergency response-team functions.

TABLE 10.
MAXIMUM RESPONSE TIMES FOR STRUCTURAL FIRE PUMPERS

Structure Type	Response Time (in minutes) ¹	
	1st 50 Percent	Remaining 50 Percent
Shops and Industrial Buildings	5	10
Hangars	5	10
Warehouses	5	10
Technical Facilities	5	10
Hospitals	5	10
Ship Berthing	5	10
Administrative	7	14
Exchange and Commissary	7	14
Recreation and Assembly	7	14
Dining Halls	7	14
Bachelor Quarters, Dormitories	7	14
Multifamily Dwellings	9	18
Single and Duplex Dwellings	9	18
Trailer Courts	9	18
Isolated or Scattered Buildings	15	20

Note: Source: Department of Defense Instruction 6055.6, DOD Fire and Emergency Services

¹Department of Defense components may increase response times when adequate fixed fire-protection systems are provided.

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 Land Use

4.1.1 Alternative A Impacts (Proposed Action)

4.1.1.1 On-Base Land Use

The proposed project would be located in the Main Base flightline area. Specifically, activities would take place on South Flightline Road. This is consistent with the land use designation established in the *Edwards Air Force Base General Plan* (AFFTC 2001a). The siting of the proposed project was approved in an out-of-cycle Base Planning and Zoning Committee vote, presented on 25 January 2005. Therefore, no adverse impacts to on-base land use are anticipated.

4.1.1.2 Architectural Compatibility

Construction of the fire station would be consistent with the Edwards AFB Design Standards. Consultation with the Engineer Division Office for coordination of architectural styles and paint schemes, and with the Design/Construction Flight Office for the design of signs, roads, parking, utilities, or landscapes, would ensure consistency with the Edwards AFB Design Standards and the intent of the *Edwards Air Force Base General Plan* (AFFTC 2001a). Therefore, no adverse impacts are anticipated.

4.1.1.3 Airfield Operations

The proposed project would include construction on the flightline. All activities would be conducted in accordance with applicable airfield criteria AFIs, including those listed in Section 3.1.1. Therefore, no adverse impacts to airfield operations are anticipated.

4.1.1.4 Foreign Object Damage Control

Material or debris, such as nuts, bolts, screws, wood, trash, or pieces of concrete or asphalt may end up on the runway, taxiways, or apron as a result of construction activities. These objects could puncture tires, damage engines, or be blown by helicopter rotor downwash. This could cause damage to aircraft and helicopters and possible injury or death to personnel. However, continued implementation of standard practices and existing policies would reduce the potential for these impacts. Therefore, no adverse impact is anticipated as a result of FOD.

4.1.1.5 Noise (Annoyance)

The proposed project is located adjacent to the Main Base flightline. The construction of the fire station could potentially expose workers to increased noise levels by aircraft and helicopter operations, engine testing, and the operation of powered TSE. However, the use of AFOSH and OSHA hearing protection would reduce the potential for these impacts. Therefore, no adverse impacts are anticipated.

4.1.1.6 Direct/Indirect Effect

Construction of a new fire station would have a direct effect on land use through the creation of an additional facility. These effects are expected to be minimal since the facility would be compatible with the *Edwards Air Force Base General Plan* (AFFTC 2001a), the Edwards AFB Design Standards, and all Air Force instructions and regulations. Construction activities would have an indirect effect by increasing the potential for FOD hazards. To reduce these effects, project personnel shall use standard operating procedures for the prevention of FOD.

4.1.2 Alternative A Minimization Measures (Proposed Action)

The following minimization measures are required if Alternative A is chosen.

a. Should changes occur to the approved siting of this project, final approval from the Base Planning and Zoning Committee must be obtained. Contact the Base Comprehensive Planning Branch for more information on the planning process.

b. The proposed project shall comply with AFI 32-1026, *Planning and Design of Airfields*, and AFJMAN 32-1013(I), *Airfield and Heliport Planning and Design*.

c. The proposed action shall comply with all regulations and instructions regarding airfield operations including, but not limited to, AFFTCI 11-2, *Ground Agency Operations*. Contact Airfield Management for more information regarding these regulations and instructions.

d. All project personnel shall use standard operating procedures for the prevention of FOD as identified in AFI 21-101, *Aerospace Equipment Maintenance Management*. In addition, AFJMAN 24-306, *Manual for the Wheeled Vehicle Driver*, and AFFTCI 10-2, *Control of Vehicles on the Airfield*, shall be followed.

e. New construction, renovation, or demolition activities on the flightline have the potential to leave objects on taxiways or runways that could cause damage to aircraft and interrupt flightline operations. The proponent/contractor shall contact Airfield Management for FOD reduction guidelines.

f. To avoid mission-related conflicts, new construction, renovation, or demolition activities on the flightline require 10 to 14 days advance notice to Airfield Management for any activity within flightline boundaries. The proponent/contractor shall contact Airfield Management for coordination requirements.

g. Soils surrounding project area may need to be stabilized in order to prevent FOD during operations. Contact Airfield Management for recommendations on preferred methods of soil stabilization.

4.1.3 Alternative B Impacts

Under this alternative, the construction of a new fire station would not occur. Therefore, no new impacts to land use would occur under this alternative.

4.1.4 Alternative B Minimization Measures

No minimization measures are required for this alternative.

4.2 Air Quality

4.2.1 Alternative A Impacts (Proposed Action)

A short-term degradation in air quality may be experienced during construction activities. Fugitive dust emissions (PM₁₀) could be generated through construction activities and grading in unpaved areas in preparation for the construction of the new fire station. Use of associated motor vehicles and construction equipment could cause degradation in air quality from engine emissions.

The proposed action would involve the use of construction equipment over 50 bhp. If such equipment remains on base for more than 45 days, an air quality operational permit is required from KCAPCD.

Hazardous air pollutants are considered to be (or have the potential to be) carcinogenic, mutagenic, toxic, and poisonous, and may cause nausea and a variety of immunological, neurological, reproductive, developmental, and respiratory effects. Exposure to HAPs could result in immediate or future health problems and can range from short-term minor illness to sudden death depending upon the nature of the pollutant and the circumstance of the exposure. The HAP PTE threshold values are 10 tons per year for a single HAP and 25 tons per year for any two or more HAPs. For Edwards AFB, the total HAP emissions were 4.683 and 5.561 tons in 2000 and 2001, respectively.

Hazardous air pollutant emissions generated from construction-related activities could include, but are not limited to, xylene, benzene, trichloroethene, hexane, toluene, beryllium compounds, hydrochloric acid, chromium compounds, cobalt compounds, methanol, lead compounds, polycyclic compounds, acrylic acid, mercury compounds, formaldehyde, nickel compounds, and styrene. These HAP emissions would be short-term, occurring only during construction, and would be well below the HAP PTE threshold values. Compliance with all CAA Title III HAP requirements, or any more stringent state or local requirements as they apply to stationary sources that emit HAPs, would be required. Therefore, no adverse HAP-related impacts are expected during construction.

Toxic air emissions regulated under AB 2588 would be generated as a result of construction and operational activities, including operation of portable or stationary ICEs, painting operations, and/or the use of solvents, cleaners, and adhesives. These emissions would require inclusion in the biannual Toxic Emissions Inventory Report provided to the KCAPCD by Edwards AFB. This would ensure compliance with AB 2588 implementing regulations. Therefore, no adverse impacts are expected from implementation of the proposed project.

Total air emissions for the proposed action from all sources (mobile and stationary) are estimated to be 7.80 tons of NO_x and 5.26 tons of VOC, and are considered to be *de minimis* under 40 CFR 51.853/93.153(b)(1). A copy of the conformity letter and emission calculations can be found in Appendix A. The proposed action would comply with all applicable federal, state, and local laws and regulations. Compliance with the minimization measures listed in Section 4.2.2 would further reduce anticipated impacts due to criteria pollutant or ozone precursor pollutant air emissions. Therefore, no adverse impacts are expected.

The relevant and applicable *de minimis* levels for criteria pollutant emissions in all air districts are already less than the corresponding 10-percent regional planning emission inventory threshold values. The proposed action has emissions that are below KCAPCD *de minimis* levels, and changes in *de minimis* level emissions are not expected from operation of the fire station. Thus, the proposed action would not have a regionally adverse impact in the KCAPCD.

4.2.1.1 Direct/Indirect Effects

The use of construction equipment and vehicular traffic from construction activities would directly affect local air emission levels. However, based on air emission calculations, emission levels would be at or below *de minimis* levels. Any indirect effect on regional air quality values also would be minor.

4.2.2 Alternative A Minimization Measures (Proposed Action)

The following minimization measures are required or recommended if Alternative A is chosen.

- a. The project shall comply with all applicable KCAPCD rules and regulations.
- b. Any stationary sources associated with the proposed project shall comply with all AB 2588, *Air Toxics "Hot Spots" Information and Assessment Act*, requirements, including revision of existing emission inventory plans and/or health risk assessments.
- c. The proposed project shall comply with all applicable rules and regulations as identified in AFI 32-7040, *Air Quality Compliance*.
- d. Air quality operational permits are required for ICEs over 50 bhp rating (e.g., welders, generators, and compressors) operated on Edwards AFB for more than 45 calendar days. If such equipment is to remain on base less than 45 calendar days, then a written exemption shall be obtained from the local air agency.
- e. The proposed project shall comply with all CAA Title III HAP requirements, or any more stringent state or local requirements as they apply to stationary sources that emit HAPs.
- f. The proposed project shall comply with all BACT specified in KCAPCD Rule 210.1, *New and Modified Stationary Source Review (NSR)*.
- g. All vehicles transporting clean fill material or construction debris require a cover to reduce PM10 emissions during transport.
- h. All earthwork activities shall be planned and conducted to minimize the duration that soils would be left unprotected. The extent of the area of disturbance necessary to accomplish the project shall be minimized. Exposed surfaces should be periodically sprayed with water to reduce dust.
- i. Suspend grading, disk, and other earthwork projects at wind speeds exceeding 25 mph.
- j. All mechanical equipment shall be kept in working order according to applicable technical orders and equipment maintenance manuals to reduce emissions to acceptable levels.
- k. All construction equipment and vehicles shall comply with applicable emission standards for 1996 or newer engines.

4.2.3 Alternative B Impacts

Under this alternative, the construction of a new fire station would not occur. Repairs would continue to be conducted as necessary and there would be no change in current air quality emissions with this alternative.

4.2.4 Alternative B Minimization Measures

No new minimization measures are required or recommended beyond those currently being implemented.

4.3 Water Resources

4.3.1 Alternative A Impacts (Proposed Action)

4.3.1.1 Water Quantity and Source

The proposed project would involve the construction of a new fire station. This action would require provision of potable water for a temporary construction-related workforce. In addition to the common water provisions for a facility, this facility would include showers and four fire hydrants. This is not anticipated to result in a substantial increase in demand for water as a whole. Construction and operation of the proposed project will not affect existing groundwater production wells or storage facilities. Therefore, implementation of the proposed project is expected to result in a minor impact to water sources.

4.3.1.2 Water Quality

Construction of the new fire station could potentially affect the stormwater runoff drainage patterns. As of December 2001, ground-disturbing activities at Edwards AFB no longer require coverage under the Stormwater General Permit associated with construction activities, because it was determined by the Supreme Court that Section 404 of the CWA did not extend to isolated wetlands if they are not “adjacent” to navigable waters (*Solid Waste Agency of Northern Cook County v. United States Army Corps of Engineers*, 531 U.S. 159 [2001]). Therefore, construction activities need not submit a Notice of Intent with the RWQCB. However, it is recommended that construction projects develop a site-specific SWPPP and implement the BMPs within the plan. Therefore, no adverse impacts to water resources are anticipated.

The proposed project may generate wastewater as a result of construction activities. This wastewater could damage the sewer system if it is released into the system without meeting the standards set forth in the *Reviewed Waste Discharge Requirements for U.S. Department of the Air Force, Edwards Air Force Base – Main Base Wastewater Treatment Plant Board Order No. 6-94-52* (California Water Resources Control Board [CWRCB] 1994). Damage to the sewer system, including the treatment plants, would result in the effluent quality not meeting established quality standards. Compliance with Board Order No. 6-94-52 and AFFTCI 32-6 would minimize any potential impacts to wastewater quality. Wastewater generated by construction activities would be minimal and is expected to result in a minor impact to the environment.

4.3.1.3 Direct/Indirect Effects

Construction of a new fire station has the potential to directly affect surface runoff, water quality, and water quantity; however, by implementing an SWPPP as part of the construction plan, the effects of runoff would be minimized. Instituting appropriate control measures would prevent excess soil erosion from entering and clogging the stormwater sewer lines. These control measures would indirectly affect water quality by minimizing potential infiltration of soil contaminants to the shallow groundwater. Direct and indirect effects on water resources would be minimal.

4.3.2 Alternative A Minimization Measures (Proposed Action)

The following minimization measures are required or recommended if Alternative A is chosen.

a. The proponent/contractor shall develop a site-specific SWPPP and follow the BMPs within this plan in order to meet the requirements of the CWA. The site-specific SWPPP shall be submitted to Environmental Management Division, Compliance Branch, for review prior to construction activities.

b. All conditions and requirements of CWRCB Board Order 6-01-41, *Revised Waste Discharge Requirements for U.S. Department of the Air Force, Edwards Air Force Base–Main Base Wastewater Treatment Plant* (CWRCB 1994), shall be met prior to disposal of nonhazardous wastewater to the WWTP.

c. The proposed project shall comply with AFFTCI 32-6, *Edwards AFB Wastewater Instruction*.

4.3.3 Alternative B Impacts

Under this alternative, the construction of a new fire station would not occur. Therefore, no new impacts to water resources would occur under this alternative.

4.3.4 Alternative B Minimization Measures

No new minimization measures are required or recommended beyond those currently being implemented. The current facility would continue to follow the procedures and controls outlined in the *SWPPP* (AFFTC 1998b).

4.4 Safety and Occupational Health

4.4.1 Alternative A Impacts (Proposed Action)

4.4.1.1 Exposure Hazards

Elements of the proposed project can pose health and safety issues for personnel during proposed construction activities located in the flightline area. The proposed action would expose workers to increased noise levels that may be above acceptable levels established by AFOSH and federal and state OSHA regulations. There is also the potential for inhalation exposure to ACM or LBP while tying into existing utilities. Compliance with the measures listed in Section 4.4.2 would minimize health and safety hazards to personnel.

4.4.1.2 Direct/Indirect Effects

Construction of a new fire station would have the direct effect of exposing onsite workers to noise hazards and potential exposure to ACM and LBP while tying into existing utilities. Using appropriate protective measures for noise and contacting the Asbestos Operation Office for ACM/LBP survey information would minimize the potential risks to human health. Completion of a new fire station would have a beneficial indirect effect to human health by removing some personnel from potential inhalation exposure to ACMs, LBPs and heavy-metal paints, and PCBs that may be present in the current facility.

4.4.2 Alternative A Minimization Measures (Proposed Action)

The following minimization measures are required or recommended if Alternative A is chosen.

- a. All personnel present within hazardous noise areas, as stated in AFOSH Standard 48-19, *Hazardous Noise Program*, shall follow the applicable hearing protection guidelines.
- b. The proposed project shall comply with the standards, instructions, and regulations listed in Section 3.4.1 applicable to the proposed project.
- c. While tying into existing utilities, there is the potential for exposure to ACM and LBP. Contact the Asbestos Operation Office for ACM/LBP survey information.

4.4.3 Alternative B Impacts

Under this alternative, the construction of a new fire station would not occur. The potential for inhalation exposure to ACM, LBP, and PCB-containing fixtures would continue to occur through routine maintenance activities. Therefore, no new impacts to safety and occupational health would occur under this alternative.

4.4.4 Alternative B Minimization Measures

No new minimization measures are required or recommended beyond those currently being implemented. During any maintenance activities at the existing facility, they would continue to contact the Asbestos Operation Office for ACM/LBP survey information.

4.5 Hazardous Materials and Waste

4.5.1 Alternative A Impacts (Proposed Action)

4.5.1.1 Hazardous Materials

The types and quantities of hazardous materials used during the construction of a new fire station would be similar to those already used on base. Compliance with all applicable standards and/or regulations addressing hazardous materials management is required and would ensure proper handling, use, and storage of these substances on base. Therefore, no adverse impact is anticipated as a result of hazardous materials.

4.5.1.2 Hazardous Waste

The types and quantities of hazardous wastes generated during the construction of a new fire station would not be different from those already generated on base. Compliance with all applicable standards and/or regulations addressing hazardous waste management is required and would ensure proper handling, storage, and disposal of hazardous wastes generated on base. Standard operating procedures identified in the Edwards AFB HWMP governing the control of hazardous waste would prevent the creation of new contamination sites. Therefore, no adverse impact is anticipated as a result of hazardous waste.

4.5.1.3 Solid Waste

This alternative would not be expected to create a large quantity of CDW, because the proposed project represents construction of an entirely new facility. Edwards AFB has an established procedure for staging and processing inert debris and disposing of construction and demolition debris. Civil Engineering will specify the area where the inert debris should be stockpiled. Construction-related solid waste would require disposal at an approved state-licensed landfill, as stipulated by contractual agreement. No adverse impact to on- or off-base landfills would be anticipated due to the relatively small quantity of waste generated by the proposed project.

Some waste generated from the proposed action could be recycled (e.g., concrete, asphalt, paving, and metals). Reuse or recycling of appropriate materials could reduce the amount of solid waste disposed of at landfills (either on or off base), resulting in an incrementally positive impact to solid waste management. It could also provide alternate sources for required building materials, potentially reducing future impacts on nonrenewable natural resources.

4.5.1.4 Direct/Indirect Effects

Construction of the new facility would have a minor direct effect on the use of hazardous materials and the generation of hazardous waste. The use of hazardous materials such as paints, solvents, and petroleum products, including lubricants, during construction would be no different than those already in use on base. By following regulatory practices, the indirect effect would be the minimization of risk to human health in the workplace.

4.5.2 Alternative A Minimization Measures (Proposed Action)

The following minimization measures are required or recommended if Alternative A is chosen.

- a. In accordance with 29 CFR 1910.1200, on hazard communication, all hazardous materials would be documented with required MSDSs as part of a complete hazardous materials inventory. A copy of the inventory and all pertinent MSDSs shall be submitted to Bioenvironmental Engineering in support of the Base Hazardous Materials Program and *Air Force Hazard Communication Program* (AFOSH Standard 48-21).
- b. The MSDS for each hazardous material used at the construction site shall be present during proposed project activities.
- c. The Base Director of Safety shall be notified at least 48 hours prior to hazardous materials off-loading.

d. Any hazardous waste generated during construction activities shall be handled in accordance with applicable regulations: 49 CFR 171–177, *Waste Transportation and Packaging*; 40 CFR 260–299, *Storage, Treatment, and Disposal of Waste*; AFI 32-7042, *Solid and Hazardous Waste Compliance*; and the Edwards AFB HWMP (AFFTC 1999a).

e. This project would generate CDW. The proponent/contractor shall be responsible for transporting solid waste to a state-licensed facility.

f. The contractor should segregate recyclable and reusable materials from solid waste for delivery to the appropriate recovery or disposal facilities. The 95th Civil Engineer and Transportation Directorate, Group Environmental Office, should be contacted regarding recyclable debris.

4.5.3 Alternative B Impacts

Under this alternative, the construction of a new fire station would not occur. Therefore, no new impacts to hazardous and solid waste would occur under this alternative.

4.5.4 Alternative B Minimization Measures

No new minimization measures are required or recommended beyond those currently being implemented. The proponent/contractor would continue to comply with all applicable federal, state, and local laws and regulations regarding hazardous materials and waste.

4.6 Biological Resources

4.6.1 Alternative A Impacts (Proposed Action)

4.6.1.1 Animal Species

Ground-disturbing activities may impact the desert tortoise and nesting sites of ground-dwelling birds such as the burrowing owl. No burrowing owls were observed in a survey of the project area and the proposed project is not located within or adjacent to habitat of the desert tortoise. The proposed project, however, could involve ground-disturbing activities at borrow sites that may disturb desert tortoise or burrowing owl habitat, or otherwise create conditions that are adverse to their success. This constitutes a minor impact to biological resources.

4.6.1.2 Plant Species

The proposed project could involve ground-disturbing activities at borrow sites that may disturb plant species in that area. No sensitive plant species are known to occur within the proposed project area.

4.6.1.3 Direct/Indirect Effects

Construction of facilities could use fill material for building pads. The fill material would be hauled from existing borrow pits, which would have a minor direct effect on the local plant biology in the area. Activities at borrow sites may indirectly disturb desert tortoise or burrowing owl habitat. By using designated borrow pits and consulting with Environmental Management

prior to soil excavation, environmental issues regarding potential biological encounters would be identified. Any direct or indirect effects on biological resources would be minimal.

4.6.2 Alternative A Minimization Measures (Proposed Action)

The following minimization measures are required if Alternative A is chosen.

- a. Desert tortoise awareness training shall be attended by all project personnel.
- b. Preactivity surveys (48 hours before construction begins) shall be conducted by authorized biologists.
- c. The desert tortoise may be encountered at borrow fill sites. Vehicles shall, to the maximum extent possible, remain on established roads. If this is not possible, an authorized biologist shall survey the route to be traveled. Equipment and vehicle operators shall be alert for desert tortoises and other wildlife in and along access routes. All desert tortoise burrows shall be avoided during off-road travel. When traveling off-road, speed limits shall not exceed 5 mph and shrubs shall be avoided as much as possible.
- d. Prior to commencement of work activities at approved borrow sites the proponent/contractor shall specifically establish approved locations, perimeters, and dimensions of the approved site. To establish these coordinates, the contractor shall consult with Environmental Management to identify specific environmental issues including, but not limited to, endangered, threatened, and sensitive species.

4.6.3 Alternative B Impacts

Under this alternative, the construction of a new fire station would not occur. Therefore, no new impacts to Biological Resources would occur under this alternative.

4.6.4 Alternative B Minimization Measures

No minimization measures are required for this alternative.

4.7 Geology and Soils

4.7.1 Alternative A Impacts (Proposed Action)

4.7.1.1 Topography

Topography is the greatest factor increasing soil erosion. For the purpose of this discussion, topographic features that increase erosion may be defined as any slope greater than 1:1. The soils of such slopes are influenced by gravity and have a greater tendency to erode than those on flat land. In such cases, vegetation is often an important factor in keeping such soils stable.

Trenching and grading activities expose soils to wind erosion. Due to the high winds that are common to the west Mojave, exposed soils can contribute to wind erosion, PM10 emissions, and reduction in visibility due to particles in the air. If recommended minimization measures are implemented, no adverse impacts are anticipated.

4.7.1.2 Material Site Use

Fill material is a nonrenewable natural resource available at Edwards AFB. Fill material may be needed for the proposed project. Much of this fill material would most likely be obtained from an on base borrow site. However, approved off-base sources of fill material may be used to meet specific soil type requirements and/or to augment and avoid depletion of finite, on-base resources. Fill material is available, and the minimization measures listed in Section 4.7.2 of this EA should minimize any potential impacts.

4.7.1.3 Remediation Equipment Disturbance

The ERP sites and AOCs often undergo initial site investigation followed by possible remedial actions such as site cleanup and/or long-term monitoring. These sites can be susceptible to damage from adjacent ground-disturbing activities. Numerous monitoring wells that consist of little more than short aboveground pipes may be positioned to sample groundwater at precise locations, representing hours of work. The environment of a remediation or monitoring site is sensitive to disturbance because precise measurements may require controlled conditions. The data obtained is required to accomplish ERP goals and objectives.

There are ERP monitoring wells located within the proposed project area. Project activities such as vehicle and heavy equipment operation have the potential to damage monitoring wells and/or remediation systems. If recommended minimization measures are implemented, no adverse impacts are anticipated.

4.7.1.4 Seismicity

Structural faults in the vicinity of the new fire station are dormant with no recorded seismic activity. The new fire station would be designed and constructed in accordance with current building codes and earthquake standards to ensure minimal damage during a major earthquake in the area.

4.7.1.5 Direct/Indirect Effects

Construction activities have the potential for a direct effect by damaging monitoring wells and remediation systems. Consultation with Environmental Management would be required prior to project activities in order to minimize the potential damage to ERP equipment. No indirect effects are expected.

4.7.2 Alternative A Minimization Measures (Proposed Action)

The following minimization measures are required or recommended if Alternative A is chosen.

a. All earthwork should be planned and conducted to minimize the duration that soils would be left unprotected. The extent of the area of disturbance necessary to accomplish the project should be minimized. Ground-disturbing activities should be delayed during high-wind conditions (in excess of 25 mph). Vehicular traffic, grading, and digging should not be permitted in the project area during high-wind conditions.

b. Exposed surfaces shall be periodically sprayed with water to reduce dust.

c. Design standards to be followed include: Air Force Manual 88-3(CH13), *Seismic Design of Buildings*; the USACE Guide Specification No. 13080, *Seismic Protection for Mechanical and Electrical Equipment*; the UBC Chapters 23, 26, 27, and 29 (International Conference of Building Officials 1997) with the applicable California Supplements; and Kern County building codes.

d. Prior to commencement of work activities at approved borrow sites, the proponent/contractor shall specifically establish approved locations, perimeters, and dimensions of the approved site. To establish these coordinates, the contractor shall consult with Environmental Management to identify specific environmental issues including, but not limited to, natural resources, cultural resources, and ERP concerns.

e. Fill material shall be delivered according to all applicable federal, state, and local regulations regarding the transport of fill material. Contact Environmental Management for assistance.

f. Project activities are located in close proximity to ERP monitoring wells and remediation equipment. Prior to starting work on the project, the proponent/contractor shall contact Environmental Management Restoration Branch for location of ERP equipment. Damage to ERP equipment must be avoided.

4.7.3 Alternative B Impacts

Under this alternative, the construction of a new fire station would not occur. Therefore, no new impacts to geology and soil would occur under this alternative.

4.7.4 Alternative B Minimization Measures

No minimization measures are required for this alternative.

4.8 Socioeconomics

4.8.1 Alternative A Impacts (Proposed Alternative)

4.8.1.1 Fiscal Growth

The proposed project would provide a short-term positive, incremental impact to the economy of the Antelope Valley from increased revenue generation. This increase in revenue is expected to occur as a result of money spent off base for construction materials and services. The total project is estimated at approximately \$8.4 million.

4.8.1.2 Quality of Life

The proposed action would increase the quality of life for the Fire Protection personnel that would occupy the new fire station. The new facility would provide proper accommodations for the current number of personnel and modern equipment. This includes adequate sized rooms for firefighters, HVAC unit, showering facilities, training room, larger vehicle stalls, and a storage facility to eliminate weather damage to equipment.

4.8.1.3 Direct/Indirect Effects

Construction of a new fire station would have a positive direct effect to the economy of the Antelope Valley from increased revenue generation. It would also have a positive direct effect on the quality of life for fire personnel by providing a modern updated facility that can properly house the number of personnel. No indirect effects are expected.

4.8.2 Alternative A Minimization Measures (Proposed Action)

No minimization measures are required for this alternative.

4.8.3 Alternative B Impacts

Under this alternative, the construction of a new fire station would not occur. Therefore, no new impacts to socioeconomics would occur under this alternative.

4.8.4 Alternative B Minimization Measures

No minimization measures are required for this alternative.

4.9 Infrastructure

4.9.1 Alternative A Impacts (Proposed Action)

4.9.1.1 Transportation System

Proposed project activities have the potential to impact the transportation system through traffic delays or temporary closure of roadways. Traffic delays are anticipated due to slow-moving equipment using existing roadways. Road closures or the rerouting of traffic would be temporary; lasting only as long as necessary to ensure personnel safety while the required work is completed. Construction-related traffic delays would be temporary and short-term. Early coordination with base organizations would ensure necessary safety precautions are taken and would allow ample advance notice to affected commuters and personnel. No major construction- or operational-related impacts to the existing transportation system are anticipated.

4.9.1.2 Utilities

Proposed action activities have the potential to impact existing utility lines, such as water, sewer, electrical, or natural gas through accidental penetration. This could result in temporary service interruption and the repair and replacement of the severed utility line. However, the proposed facility has been designed and will be constructed to be consistent with the existing utility system. Therefore, no adverse utility-related impacts are associated with the proposed project.

4.9.1.3 Direct/Indirect Effects

Construction of a new fire station would have a direct affect on traffic congestion in the area during construction activities. It would also have a direct affect on existing utility systems through adding to the existing usage. New utility systems at the facility would indirectly affect program efficiencies through providing modern systems and enhancing the working environment.

4.9.2 Alternative A Minimization Measures (Proposed Action)

The following minimization measures are required if Alternative A is chosen.

- a. All work that would affect closure, rerouting, or modification of roadways, streets, or highways shall be coordinated 15 days in advance with the Security Forces, Base Fire Department, and Public Affairs Office. A current copy of the California DOT *Manual of Traffic Controls for Construction and Maintenance Work Zones* (California DOT 1990) shall be used as guidance for traffic signs.
- b. The proponent/contractor shall be responsible for obtaining an AFFTC IMT 5926, *Edwards Air Force Base Civil Engineering Work Clearance Request* (digging permit). Contact the Base Civil Engineer Infrastructure Controller for coordination.
- c. Some utilities require a representative to be present on site at all times when motorized construction equipment is being used closer than 20 feet from existing lines. The project sponsor shall coordinate with Civil Engineering in order to identify the location of affected lines.
- d. If current as-built drawings indicating existing utility lines are not available, no mechanical digging can be performed within 4 feet of utilities or communication cables until they are physically exposed by hand digging.

4.9.3 Alternative B Impacts

Under this alternative, the construction of a new fire station would not occur. Therefore, no new impacts to the transportation and utility systems would occur under this alternative.

4.9.4 Alternative B Minimization Measures

No minimization measures are required for this alternative.

4.10 Energy Resources

4.10.1 Alternative A Impacts (Proposed Action)

Energy measures incorporated into the design of a newly constructed facility have the potential to reduce the energy costs compared to standard construction designs. These measures include the incorporation of energy-saving HVAC, hot water, and energy management control systems and could result in a substantial cost savings to the Air Force. Use of these measures would contribute to the achievement of energy-reduction goals and requirements established in PL 102-486, *Energy Policy Act of 1992*, and EO 13123, *Greening the Government through Efficient Energy Management*. Construction of the new fire station would utilize up-to-date energy efficient systems.

4.10.1.1 Direct/Indirect Effects

The installation of energy efficient systems would have a positive direct effect on energy costs by using energy-saving HVAC, hot water, and energy management control systems. Installation of these systems would indirectly affect worker productivity by creating a modern working environment.

4.10.2 Alternative A Minimization Measures (Proposed Action)

If Alternative A is chosen, it is recommended that the best available energy conservation measure be incorporated into the design of the fire station.

4.10.3 Alternative B Impacts

Under this alternative, the construction of a new fire station would not occur. Therefore, no new impact to energy resources would occur under this alternative.

4.10.4 Alternative B Minimization Measures

No minimization measures are required for this alternative.

4.11 Public/Emergency Resources

4.11.1 Alternative A Impacts (Proposed Action)

The proposed action would have a positive impact on the public/emergency resources. The new fire station would allow for larger modern firefighting vehicles and the storage facility would eliminate weather damage to equipment. This will aid in preventing fire and reducing loss from fire/hazardous material incidents on base.

4.11.1.1 Direct/Indirect Effects

Construction of the new fire station would directly affect the public/emergency resources by allowing them to obtain larger modern firefighting vehicles and protecting equipment from weather damage. The proposed action would have an indirect effect by aiding in preventing fire and reducing loss from fire/hazardous material incidents on base.

4.11.2 Alternative A Minimization Measures (Proposed Action)

No minimization measures are required or recommended.

4.11.3 Alternative B Impacts

Under this alternative, the construction of a new fire station would not occur. No improvements would be made for larger modern firefighting vehicles and protection of equipment. Therefore, no new impacts to public/emergency resources would occur under this alternative.

4.11.4 Alternative B Minimization Measures

No minimization measures are required for this alternative.

NEPA Mandated Analysis

The construction of the proposed facility would affect certain aspects of the environment. These aspects have been evaluated together with five additional categories of impacts that include:

- a. Direct/Indirect Effects
- b. Short-Term Use Versus Long-Term Productivity
- c. Cumulative Effects
- d. Unavoidable Adverse Effects, and
- e. Irreversible and Irretrievable Commitments of Resources

The evaluation of direct/indirect effects was presented earlier, in the discussion of the affected environment in Section 4.0, Environmental Consequences. A discussion of cumulative effects, unavoidable adverse effects, short-term use versus long-term productivity, and irreversible and irretrievable commitments of resources are discussed in the following sections.

4.12.1 Cumulative Impacts

The CEQ regulations implementing NEPA require agencies to consider the potential for cumulative impacts of the proposed actions. “Cumulative impact” is defined in 40 CFR 1508.7 as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions.” Past projects, or those implemented or built before 2005 can be considered to be part of the existing environmental conditions baseline presented in this EA. Included within the concept of past projects are all maintenance activities, land development projects, and other actions that occurred before detailed analysis began on this EA. Cumulative impacts can result from individually minor, but collectively significant actions taking place over time.

Present projects occurring on the base include repavement and regrading of roads, demolition/replacement of older military family housing, demolition of surplus family housing units, construction of a new runway, and demolition/reconstruction of Runway 04/22. The long-term cumulative impacts from these activities would be minimal since most of these activities are continuing operations or maintenance to existing structures that are already part of the existing baseline conditions and only a small percentage are new construction.

For the proposed action, the addition of a fire station would be compatible with the *Edwards Air Force Base General Plan* (AFFTC 2001a). Impacts to physical resources (e.g., noise, air quality, or erosion) related to construction activities would not contribute substantially to cumulative impacts since they are typically localized and temporary. Long-term noise impacts to adjacent areas following completion of a new fire station would also be negligible. Demands on regional utilities to provide sanitary services, electrical services, natural gas supply, and telephone and other communication services would be well within existing capabilities for the area. Impacts on solid and hazardous waste services and activities, as well as energy demands for construction equipment and worker transportation, would be well within existing capabilities for the area. Impacts to geology and soils also would not contribute substantially to cumulative impacts since they would be localized and temporary. Long-term impacts to these resources from the implementation of the proposed action would be minimal, as discussed throughout Section 4.0, Environmental Consequences.

Implementation of the Proposed Action Alternative would enhance the economics of the local area through the purchase of construction materials and by providing jobs for the duration of the project. In addition, construction personnel would utilize services both on and off base.

Regionally, on a city or state level, the changes in employment income and other economic indicators as a result of the influx of construction personnel would be minor to the total regional economy and would not represent any significant cumulative impact.

The No Action Alternative would result in no change to the existing conditions. Therefore, no adverse impacts would result. However, with continued use of the existing fire station, renovations or repairs have the potential to expose personnel to ACM, LBP, and PCBs. This impact would occur whether or not the proposed action is implemented. The activities currently occurring at the existing fire station would remain relatively unchanged. Renovations and repairs to the facility would occur on an as-needed basis. In addition, worker productivity and retention, along with personnel recruitment would be challenged due to overcrowded conditions that create an inefficient and nonuser friendly environment, as well as potential loss of equipment due to weather damage.

4.12.2 Unavoidable Adverse Impacts

Unavoidable adverse impacts include those that are negative, occurring regardless of any identified minimization measures.

a. Physical Resources—Exposure of surface soils during construction activities would cause erosion, especially during wind and rain events. Short-term increases in suspended sediment loading due to soil erosion during construction activities would occur. Construction activities would increase fugitive dust levels and emissions would occur from construction equipment and worker vehicles. Noise levels would increase during construction, but would only occur during normal work hours. Short-term unavoidable adverse effects would result from the use of hazardous materials and the generation of solid waste.

b. Biological Resources—Approximately 3 acres of undisturbed land would be developed through implementation of the proposed action. Minimal impacts to wildlife species would occur because of this project.

c. Socioeconomic Resources—Commitment of building and construction materials, as well as resources such as water, sewage, electricity, and natural gas, would result from operation and maintenance of the proposed facility.

Under the No Action Alternative, a new fire station would not be constructed and, therefore, overcrowded conditions would continue. In addition, a potential exposure risk to ACM, LBP, and PCBs would remain during repairs or modifications to the existing fire station.

4.12.3 Short-Term Use versus Long-Term Productivity

This section discusses the proposed project's short-term use of man's environment and the maintenance and enhancement of long-term productivity. Short-term uses, and their effects, are those activities that would occur during project construction activities. Long-term productivity looks at economic, social, and planning objectives, and sustainability.

a. Effects of short-term use that would occur during construction activities include:

- (1) Construction noise hazards;
- (2) Hazardous material use and generation of hazardous waste;

(3) Possible disturbance to biological resources and their habitat, although no biological resources were observed in the project area;

(4) Potential to damage monitoring wells, lines, and/or remediation systems;

(5) Increase in workforce and expenditure of funds to the local economy; and

(6) Minor disruptions in vehicular traffic due to the movement of construction material and workers.

b. This project would have the following effects on long-term productivity.

(1) Compliance with the Base General Plan would ensure the location of the new fire station is not in conflict with other land use issues and is the best use of the site.

(2) Moving personnel to a new updated facility would remove them from potential inhalation exposure to ACMs, LBPs and heavy metal paints, and PCBs that may be present in the current facility.

(3) Workers would be attracted to the modern facility affecting the local economy.

(4) The Air Force would save on energy resources with the installation of energy-efficient systems.

(5) Modern vehicles and equipment in good working order would aid in preventing fire and reducing loss from fire/hazardous material incidents on base.

4.12.4 Means to Mitigate or Minimize Adverse Environmental Impacts

Minimal impacts to physical resources as a result of implementation of Alternative A—the Proposed Action would occur primarily during construction of the proposed facility. Although the impacts would be short-term, contractors would have to adhere to environmental regulations regarding adverse effects from soil erosion, noise, air pollution, water contamination, and other impacts that would affect the physical environment. Environmental impacts from the No Action Alternative would be minimal since no new construction would occur.

4.12.5 Irreversible and Irretrievable Commitment-of-Resources

Irreversible commitment of resources entails the consumption of, or adverse effect upon, resources that cannot be reversed or persists for an extremely long period of time. Irretrievable commitment-of-resources are those that are consumed or affected for a short period of time and that would be restored over time. Irreversible and irretrievable commitment of resources would result from the construction of the new fire station. Construction of the new facility would require the commitment of labor, capital, energy, biological resources, building materials, and land resources. Irretrievable commitments include fill material from the borrow pits, labor, capital, and fossil fuels that result directly from construction activities and indirectly from the provision of services to the proposed site during construction. Irreversible commitments of resources would result directly from operation and maintenance of the facility from the provision of water, sewage, and electricity services to the building and associated new occupants during use. New building materials would also be long-term commitments.

Under the No Action Alternative, Alternative B, there would be no commitment of such resources.

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7.0 LIST OF AGENCIES AND ORGANIZATIONS TO WHOM COPIES OF THE ENVIRONMENTAL ASSESSMENT ARE SENT

Federal Agencies

AFFTC Technical Library, Building 1400, Edwards AFB, California

Edwards Base Library, 95th Mission Support Group (95 MSG/SVRL), Edwards AFB, California

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FINAL



APPENDICES



October 2006

APPENDIX A
AIR EMISSION CALCULATIONS AND
CONFORMITY LETTER

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TABLE A-1
AIR CALCULATIONS FOR DEMOLITION/CONSTRUCTION EQUIPMENT

Mobile Equipment Type	Emission Factors (lb/hr)					No. of Hours	No. of Units	Mobile Equipment Type	Emissions (tons/yr)				
	CO	NO _x	VOC	SO _x	PM				CO	NO _x	VOC	SO _x	PM
Track Tractor	0.346	1.260	0.121	0.1370	0.11200	160		Track Tractor	0.028	0.101	0.010	0.011	0.009
Wheeled Tractor	3.590	1.269	0.188	0.0900	0.13600	160		Wheeled Tractor	0.287	0.102	0.015	0.007	0.011
Track Loaders	0.201	0.827	0.098	0.0760	0.05800			Track Loaders	0.000	0.000	0.000	0.000	0.000
Wheeled Loaders	0.572	1.890	0.250	0.1820	0.17200			Wheeled Loaders	0.000	0.000	0.000	0.000	0.000
Motor Graders	0.151	0.713	0.040	0.0860	0.06100	160		Motor Graders	0.012	0.057	0.003	0.007	0.005
Off-Road Trucks	1.794	4.166	0.192	0.4540	0.25600			Off-Road Trucks	0.000	0.000	0.000	0.000	0.000
Misc. Wheeled	0.675	1.691	0.152	0.1430	0.13900	160		Misc. Wheeled	0.054	0.135	0.012	0.011	0.011
Gas Forklifts	12.600	0.326	0.421	0.0170	0.02100			Gas Forklifts	0.000	0.000	0.000	0.000	0.000
Diesel Forklifts	0.434	2.010	0.160	0.1330	0.14300	160		Diesel Forklifts	0.035	0.161	0.013	0.011	0.011
Shipping Trucks	0.046	0.026	0.051	0.0000	0.01215	160		Shipping Trucks	0.004	0.002	0.004	0.000	0.001
Track Dozers	0.346	1.260	0.121	0.1370	0.11200			Track Dozers	0.000	0.000	0.000	0.000	0.000
Graders	0.151	0.713	0.040	0.0860	0.06100			Graders	0.000	0.000	0.000	0.000	0.000
Excavator	0.675	1.691	0.152	0.1430	0.13900	160		Excavator	0.054	0.135	0.012	0.011	0.011
Haul Trucks	1.794	4.166	0.192	0.4540	0.25600			Haul Trucks	0.053	4.166	0.014	0.007	0.006
Scraper	1.257	3.840	0.282	0.4630	0.40600	160		Scraper	0.101	0.307	0.023	0.037	0.032
GSA Types	Emission Factors (lb/per mile)					No. of Miles	No. of Units	GSA Types	Emission Factors (tons/per year)				
Light-Duty Gasoline Vehicle (LDGV)	0.237	0.007	0.021	0.0004	0.00030			LDGV					
Light-Duty Gasoline Truck (LDGT)	0.068	0.003	0.007	0.0001	0.00020	2,000		LDGT	0.068	0.003	0.007	0.000	0.000
Light-Duty Diesel Truck (LDDT)	0.008	0.004	0.002	0.0010	0.00100			LDDT					
Heavy-Duty Gasoline Truck (HDGT)	0.066	0.010	0.006	0.0004	0.00030	2,000		HDGT	0.068	0.003	0.007	0.000	0.000
Heavy-Duty Diesel Truck (HDDT)	0.053	0.045	0.014	0.0070	0.00600	2,000		HDDT	0.053	0.045	0.014	0.007	0.006
						Total Motor Vehicle Emissions (tons/year)			0.817	5.217	0.134	0.109	0.103
Stationary Equipment	Emission Factors (grams/brake horsepower/hr)					No. of Hrs		Stationary Equipment	Emissions (tons/yr)				
Light Duty Gasoline Engine (LDGE)	250.000	4.970	15.200	0.3900	0.44000	960		LDGE	46.256	0.920	2.812	0.072	0.081
Light Duty Diesel Engine (LDDE)	8.500	9.000	1.700	0.5000	1.50000	960		LDDE	1.573	1.665	0.315	0.093	0.278
						DISTURBED EARTH and debris:							9.000
						arch coat and adh:					2.000		
						Total Emissions (Tons/Year)			48.646	7.802	5.261	0.274	9.463



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 95TH AIR BASE WING (AFMC)
EDWARDS AIR FORCE BASE CALIFORNIA

19 September 2006

MEMORANDUM FOR AFFTC/CV

FROM: 95 ABW/CEV

SUBJECT: Clean Air Act General Conformity Statement for Control No. 04-1465,
Construction of a New Fire Station

1. The following finding is made regarding the need for a general conformity demonstration under the *Clean Air Act* with respect to the Proposed Action.

a. The Proposed Action is located in the Kern County Air Pollution Control District (KCAPCD). Under regulations promulgated pursuant to the *Clean Air Act*, Title 42 United States Code (U.S.C.) Part 7506 (c), the portion of the project area regulated by the KCAPCD is located in an attainment/maintenance area for ozone. The *de minimis* level set for this area for emissions of ozone precursor pollutants (volatile organic compounds [VOC] or oxides of nitrogen [NO_x]), in accordance with Title 40 Code of Federal Regulation (CFR) Part 51.853/93.153 (b)(1) and KCAPCD Rule 210.7, is up to 100 tons per pollutant (VOC or NO_x) per year per action.

b. For the KCAPCD, the 1990 regional planning baseline emission inventories for ozone precursor pollutants are included in the 1994 *California Ozone State Implementation Plan*. The baseline planning values for KCAPCD are 14,965 and 6,205 tons per year of NO_x and VOC, respectively. In accordance with 40 CFR 93.153, the 10-percent threshold values for determination of regional significance for KCAPCD are 1,496.5 and 620.5 tons per year of NO_x and VOC, respectively.

c. It has been determined that the relevant air emissions for this action are 7.8 tons of NO_x and 5.3 tons of VOC per year. The direct and indirect emissions, when totaled, are less than the *de minimis* levels specified in 40 CFR 51.853/93.153(b)(1), and are less than the 10-percent threshold values for determination of regional significance; therefore, the project is presumed to conform and a conformity determination is not required.

2. Should you have any questions with respect to this finding, please direct them to James Specht at (661) 277-1411.

A handwritten signature in black ink, reading "Robert M. Shirley", is positioned above the typed name and title.

ROBERT M. SHIRLEY, Chief
Environmental Quality Branch